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MAY 1987

VOLUME 5
NUMBER 5

FAMILY COMPUTING

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24 AT-A-GLANCE
SOFTWARE
REVIEWS

Rave Reviews



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CIRCLE READER SERVICE 43

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And half the Japanese fleet crawling up your spine.

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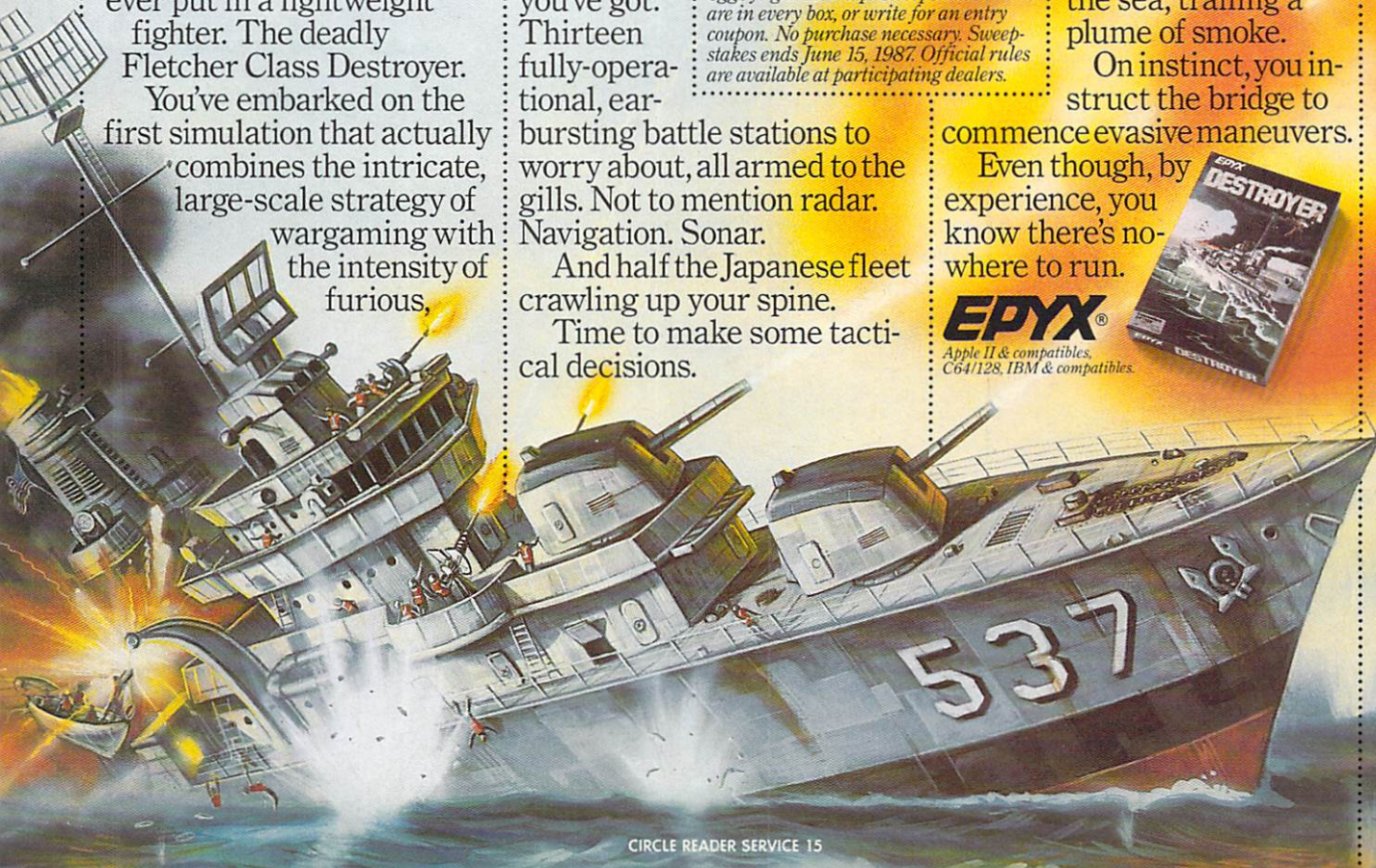
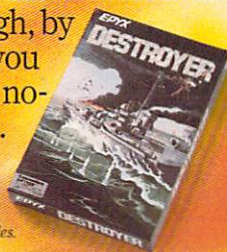
Suddenly, you hear the ominous rumble of incoming Zeroes. You fire, and send one plummeting to the sea, trailing a plume of smoke.

On instinct, you instruct the bridge to commence evasive maneuvers.

Even though, by experience, you know there's nowhere to run.

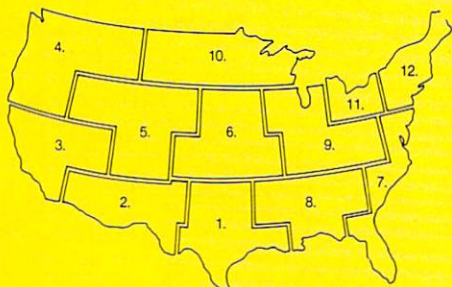
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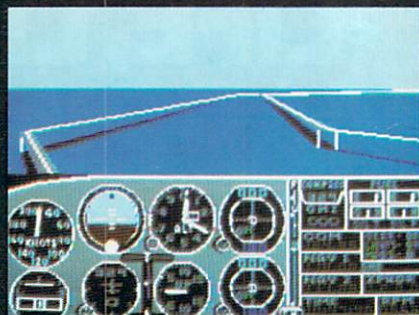
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Your computer and the right software can help learning-disabled youngsters compensate for their disabilities and make the most of what they learn in school. FAMILY COMPUTING readers tell how they used computers to give their children a better chance for the future.

PLUS: RESOURCES FOR PARENTS

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Family Budget 1987				
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Budget				
	January	February	March	April
Salary Income	\$2400.00	\$2400.00	\$2400.00	\$2400.00

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*See program for specific computer models and hardware requirements.

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COVER PHOTOGRAPH BY JOEL WHITE

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EDITOR'S NOTE

BEING RIGHT AND BEING WRONG

More years ago than I care to remember, I had a friend named Donald who had a recurring dream. Donald dreamed that he died and went to heaven. In heaven he saw all his heroes, including Plato and Socrates, Rembrandt and Leonardo, Abraham Lincoln and Oliver Wendell Holmes, and they all came to him and said, "Donald, you were right."

"And that to me," said Donald, "is heaven!"

Well, to many of us being right in the eyes of our heroes is heaven, and we all know that at times being wrong can seem like hell. That's the way some of us at FAMILY COMPUTING feel about something that happened with our March issue.

Our cover story was on IBM compatibles. With the growing interest in these machines and the proliferation of brands on the market, we thought we could help our readers by providing guidelines for evaluating the numerous models available. We still think that's a good idea. But we erred in grouping machines into broad categories, often described in general terms. As a result, we made our readers responsible for interpreting some of our judgments. That was especially true in the case of the category we labeled "low-cost no names," which we said included both good buys and models that require a cautious eye before buying.

By failing to evaluate each computer on its own merits, we also were unfair to the industry. John Rossi, president of Blue Chip Electronics, protested our inclusion of his company's product with computers we cautioned people against buying. And he questioned how we could call a computer manufactured by the Korean auto giant Hyundai a "no-name." He was right.

Good quality computers can be



bought at reasonable prices at stores and via mail order. But some of the newer companies to enter the MS-DOS arena, like Blue Chip and Amstrad, are making it possible for the consumer to buy computers at retail outlets for prices formerly available only through mail order. This is a welcome option for those people reluctant to order by mail.

So, yes, we were wrong in our grouping—but not in our basic concept. With the adoption of IBM-compatible computers for consumer use growing at its current rate, we'll be increasing our coverage of these machines. Next month, in our semi-annual "Buyer's Guide to Computers," we're including a section on MS-DOS machines. Plans are also underway to review a number of these computers in greater depth.

We take our responsibility to you very seriously and turn with greater commitment than ever to providing our readers with the information they need to make the informed and successful buying decisions that lead to productive computing experiences.

Claudia Cohl

CLAUDIA COHL
EDITOR-IN-CHIEF

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2	SARGON III	5 seconds
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4	SARGON III	15 seconds
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6	Chessmaster	30 seconds
7	SARGON III	3 min
8	SARGON III	3 min

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SARGON III WRITES CHESS HISTORY

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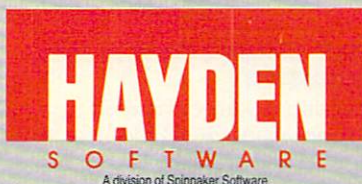
a master rated 2209. That makes Sargon III the only microcomputer program ever to defeat a player at that level.

Sargon III has no trouble wiping Chessmaster 2000 off the globe. Someday, maybe a chess playing program will be able to beat Sargon III. Until then, which chess program do you want to own: the world champion or the runner-up?

(Note: The test was run on two Apple II computers. Each program played once as white and once as black at each level. Send us \$5.00 for handling, along with a postage paid return envelope and we'll send you a copy of the moves each side played.)



Sargon III is available for: Apple II series, Apple Macintosh, IBM PC and Commodore 64/128 computers. You can find Sargon III at your local retailer or call 1-800-826-0706. Illinois residents call 1-800-826-1330. Only MasterCard, VISA and American Express accepted for phone orders.

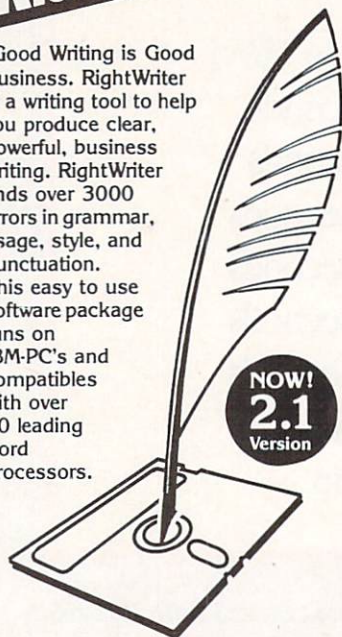


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CIRCLE READER SERVICE 35

LETTERS

KEEP GROWING WITH US

I read with interest your article about using a graphics program to create pictures. Quality presentation graphics are a business plus, whether one has a small business or a large corporation. However, I believe you stopped short on your suggestions for a quality output when you mentioned only color printers or hand coloring transparencies.

You might also have mentioned color plotters that produce color hard copy and transparencies with little effort. When you consider the value of the time a business person might spend coloring, \$1,300 invested in a color plotter doesn't seem expensive. I am especially pleased with the superior results I get from my IBM 6180 eight-pen desktop plotter.

Just because you are a family magazine, you shouldn't sell short those of us who have grown with you. We still subscribe, though we are no longer novice computer buffs and have incorporated our use of computers and computer peripherals into our business life. Keep growing with us.

CAROL SLAYMAKER

New Fairfield, Connecticut

THANK YOU FOR THE INSPIRATION

I was greatly inspired by your article on handicapped persons using computers (see *Home-School Connection*, February 1987). I wrote the sources mentioned and have received a great deal of useful information. It inspired me to convince a friend to teach me enough BASIC to write my own program for my son who has cerebral palsy. My program, written for the IBM PCjr, changes the color on the screen nine times. It increases the one-second decibel tone with each color change, and then goes backward through the colors as the tone goes back down the scale. I am hoping this will encourage him to use his arms and teach him cause and effect in a non-threatening way.

MARY ANN McCONNELL

Mercer, Pennsylvania

WHY MUST I BUY A NEW MONITOR?

I purchased an enhanced Apple IIe with an Apple RGB monitor less than two years ago. I have been looking into the possibility of upgrading

to an Apple IIGS. This would mean spending about \$600 for the upgrade, and another \$350 for the disk drive. What I can't understand is why Apple has not made its old RGB monitor compatible with the new computer.

I work as a librarian-computer specialist in the Tomahawk Elementary School in Wisconsin. I also help publish a school newspaper. As an alternative to a Mac, I would like to use a IIGS with some of the new desktop-publishing programs. I can't afford to buy a whole new monitor.

We have always been very happy with our Apple computer. However, Apple should at least be able to make its new computer compatible with its former RGB monitors.

NANCY STARK

TOMAHAWK ELEMENTARY SCHOOL

Tomahawk, Wisconsin

EDITOR'S NOTE: There are two types of RGB monitors: digital and analog. In order to deliver the improved color of the new IIGS, Apple had to go with an analog RGB monitor; you have a digital RGB monitor. Because of its analog output, the IIGS is not compatible with digital Apple RGB monitors, and there is no way to convert from one to the other. It is the analog that produces more colors.

THANKS FOR THE MENTION, BUT...

Thanks for the mention of our *Dvorak Developments* newsletter in your January issue (Letters, page 4). I'm sure many of your readers are interested in getting information on the more efficient, easy-to-learn Dvorak keyboard layout. Unfortunately, the letter as printed contained some errors.

Dvorak Developments costs \$12 per year, not \$20, and we moved to a new address several months ago. We don't want people to be disappointed if their mail doesn't reach us, so we will be glad to send a free sample issue of the newsletter to any of your readers who send a self-addressed envelope with 39 cents postage to our new address: *Dvorak Developments Newsletter*, P.O. Box 1895, Upland, CA 91785.

RANDY CASSINGHAM

EDITOR, DVORAK DEVELOPMENTS

Upland, California

CORRECTIONS

In February's "Buyer's Guide to Hard-Disk Drives" (page 58), a caption incorrectly described the Bernoulli 10 + 10 disk drive. The 10 + 10 has two removable high-density floppy disks encased in a hard plastic shell. Each disk stores 10 megabytes of data.

In the March "Buyer's Guide to IBM PC-Compatible Computers," we incorrectly listed the retail chains that carry the Blue Chip Personal Computer. The chains are Target, Federated Group, Fedco, Caldor, Save-Mart, and The Wiz. Toys R Us and Walmart are test-marketing the Blue Chip PC.

The IBM PC/XT Compatibles chart in the March "Buyer's Guide to IBM PC-Compatible Computers" listed the incorrect version of MS-DOS included with the Tandy 1000 SX computer. MS-DOS 3.2 is the version included with that computer.

The correct number for Commodore's customer support service, mentioned on page 48 of the March "Guide to Computer Repair," is (215) 436-4200.

The correct price for Natural Micro-System's Watson telephone answering machine listed in April's "Starting Your Own Home Business" (page 33) is \$498.

UPDATES

As of press time, the Blue Chip PC (\$599) includes MS-DOS 3.2 without documentation, announced Linda Yogel, spokesperson for Blue Chip Electronics, Inc. MS-DOS 3.2 with GW-BASIC and full documentation costs an additional \$99.

Professional Software's *Fleet System 3* (see the Commodore column of *Machine Specifics* in the March issue, page 30) is now available only for Apple II series computers and not for the Commodore 128. *Fleet System 4* (the latest version available by early March this year) will run on the 128 and features a 90,000-word spelling checker.

FAMILY COMPUTING looks forward to letters from all our readers. Please direct your correspondence to: Letters to the Editor, FAMILY COMPUTING, 730 Broadway, New York, NY 10003.

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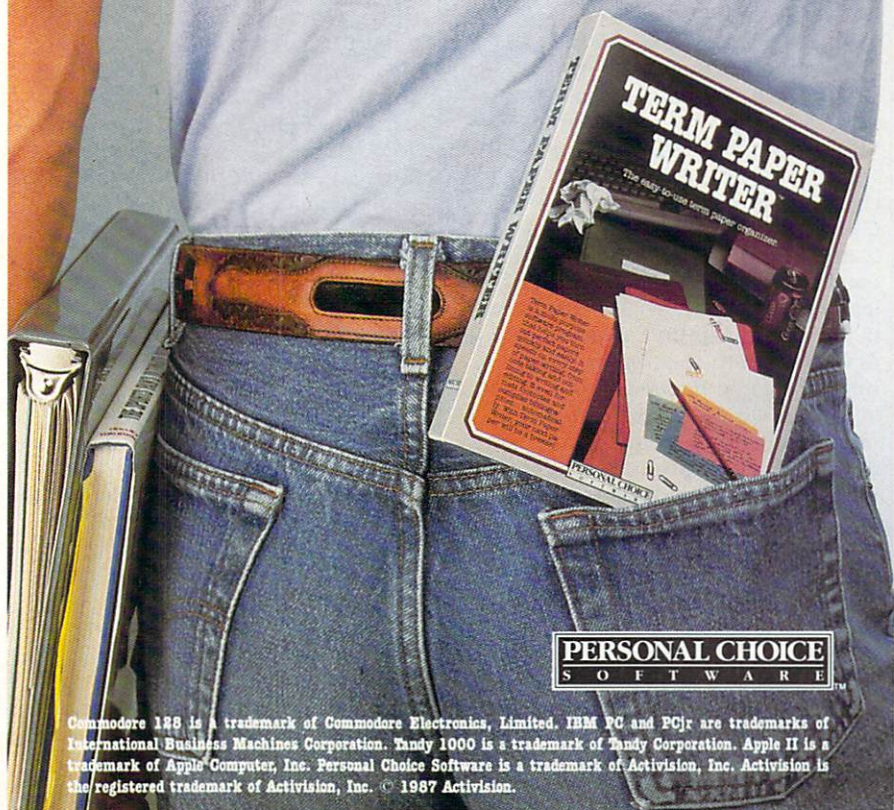
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HOME-SCHOOL CONNECTION

CLOSING THE GAP

Learning-Disabled Children and Their Parents Discover That Computers Aren't Just for Whiz Kids

BY BERNADETTE GREY

"Both of our children were first diagnosed as learning disabled before they started kindergarten," says Stefan Gieryn. "We were frustrated for the next five or six years because we wanted to help our kids but we didn't know how. We went from one parent-teacher conference to another and asked 'How can we help? How can we help? What can we do?' The special-education teachers told us, 'Don't worry. If you're frustrated, let us handle it.'"

"Well, for some parents that might be just fine and dandy," says Stefan, "but we wanted to take an active role in our children's education. We wanted the chance to try to help them."

"That's what the computer meant to us. It was our chance to try to make a difference. And we did."

LD KIDS FACE OVERWHELMING OBSTACLES

Stefan and Diane Gieryn, who live in Madison, Wisconsin, have a 12-year-old daughter, Dawn, and a 9-year-old son, Garth, who have learning disabilities. According to the U.S. Department of Education, the Gieryn kids are just two of nearly 2 million children across the country who have some type of learning disorder, such as *dyslexia* (a reading disability), *dyscalculia* (a disturbance in the ability to do mathematics), or *dysgraphia* (a disability in which handwriting is disorganized). That means that there's a national population of students twice the enrollment of the New York City public school system who struggle to keep up with their peers because they have trouble learning.

Even parents of gifted children admit that at times it's backbreaking to convince their kids to read a book for fun, write a thank-you letter to Grandmother, or complete math



dittos. When children are learning disabled, parents' efforts to encourage learning can be futile because their kids have faced so many demoralizing failures in the past. What child can bear to spend two hours staring at a multiplication table that he or she can't make sense of? And it can be equally frustrating for the teacher or parent who tries in vain to explain why seven times seven equals 49.

COMPUTERS CAN MAKE THE DIFFERENCE

While many parents of learning-disabled children entrust the schools with the frustrating task of teaching, others have vowed to do all they can at home to close the gap between their children's skills and those of their peers. The Gieryns and a number of other FAMILY COMPUTING readers have told us that, with the exception of their own determination, computers have had the most positive effect on their children's desire to learn. It's made the difference in Dawn and Garth Gieryn's motivation to learn; it's

made the difference for Arthur Wagner, who is learning disabled as the result of an accident; and it's made the difference for Edy Ray, a 17-year-old who reads at about the sixth-grade level.

That may come as a surprise to many parents and even some educators who are convinced that computers should be used only by above-average students—tomorrow's scientists, mathematicians, and MBAs. "When my husband first mentioned using a computer with the kids, that's what I thought," Diane Gieryn admits now. "I said, 'A computer? They're behind the other children. A computer will definitely be too complicated for them.' And I thought, 'Gee whiz, I'd never be able to do that.'"

But like other families, the Gieryns gave it a shot. One mother, Linda Wagner, of Cicero, Illinois, was very skeptical when she first bought an Apple IIe for her son, Arthur: "This was it, our big investment with no guarantee. I would do this for his education. When they dropped off 10 boxes, each one with a book of directions and instructions in a language I'd never heard of, I wanted to get my money back. My son wanted to turn it on. It took three hours to put it together but to watch him study the screen and practice on the keyboard was great."

Arthur, who was hit by a truck when he was seven years old, "changed from a child who looked at life in a beautiful way to a child who hated waking up in the morning," says his mother Linda. "He hated school because of the fact he just couldn't retain what he read. He missed many of the formulas for math and the frustration he felt from teachers didn't help. This went on until seventh grade."

That's when the Wagners bought their Apple IIe. "In eighth grade, Arthur didn't want to miss a day of school," says Linda.

BERNADETTE GREY is FAMILY COMPUTING'S associate editor.

ILLUSTRATION BY MONA MARK

SUPPLEMENT SCHOOL LEARNING

A computer and the right software can help learning-disabled children make the most of what they are taught in school and can help them compensate for their disabilities.

Another FAMILY COMPUTING reader, Vicki Brodie, of Alameda, California, says, "I can't begin to tell you how much my daughter Edy has accomplished using the computer." In December 1985, Vicki and her husband, Clifford, purchased an Apple IIe with two purposes in mind: to set up a home office and to reinforce and supplement what their children—particularly Edy, who is learning disabled—learn in school. "Straight academics just weren't helping Edy," says Vicki.

Seventeen-year-old Edy suffers from dysgraphia and dyscalculia, and she also has trouble putting things in a logical sequence. "Logic is hard for her," says Vicki. The Brodies have found that it's easier for Edy to understand the abstract—e.g., time and space—and to "see" logic when it's visual. With programs like *Layer Cake*, which help develop logic, Edy can learn to compensate

RESOURCES

ACLD Newsbrief, published by Assn. for Children & Adults with Learning Disabilities, 4156 Library Road, Pittsburgh, PA 15234; ([412] 341-1515). A bimonthly, 24-page newsletter outlining the latest issues in the field of learning disabilities.

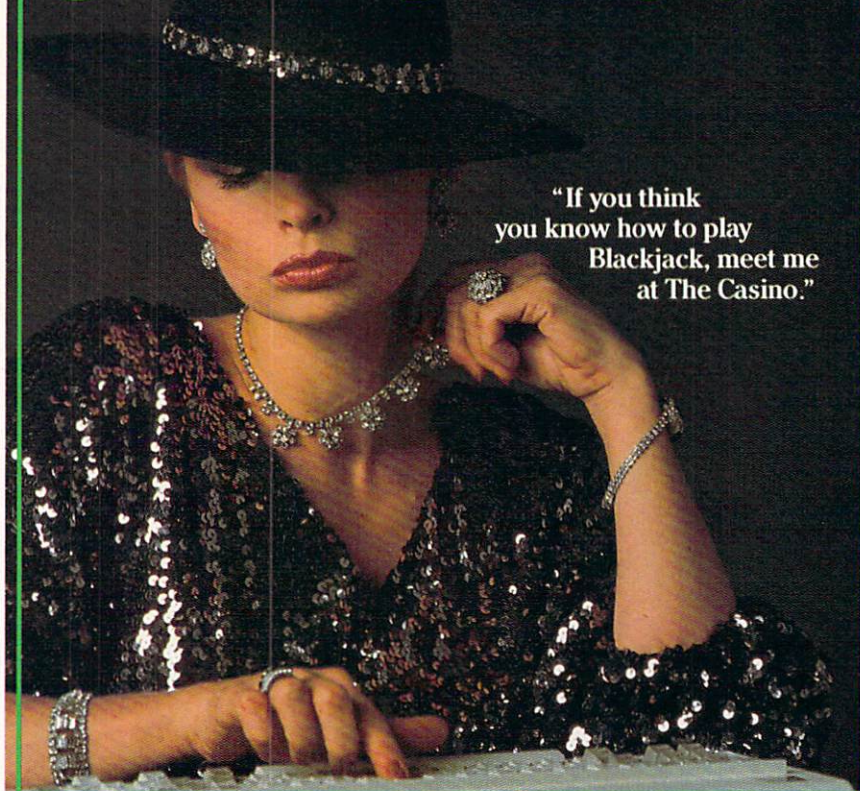
Center for Computer Opportunities for the Disabled, a public service of the Boston Computer Society, 1 Center Plaza, Boston, MA 02108; ([617] 244-7607). The learning disabled, physically disabled, the developmentally delayed, and their parents get hands-on experience with the computer as they explore its uses in overcoming and effectively managing the disability. There is no fee for the service.

Disabled Children's Computer Group, P.O. Box 186, 7230 Fairmount Avenue, El Cerrito, CA 94530; ([415] 528-DCCG). Operates a public-access computer resource center to help families and professionals identify appropriate available computer resources. Services are free to members who pay \$20 annual dues.

Parentele, 5338 N. Pennsylvania Street, Indianapolis, IN 46220; ([317] 259-1654). A national coalition created and operated by volunteer parents and friends of those with handicaps; publishes a quarterly newsletter, *Crisscross*.

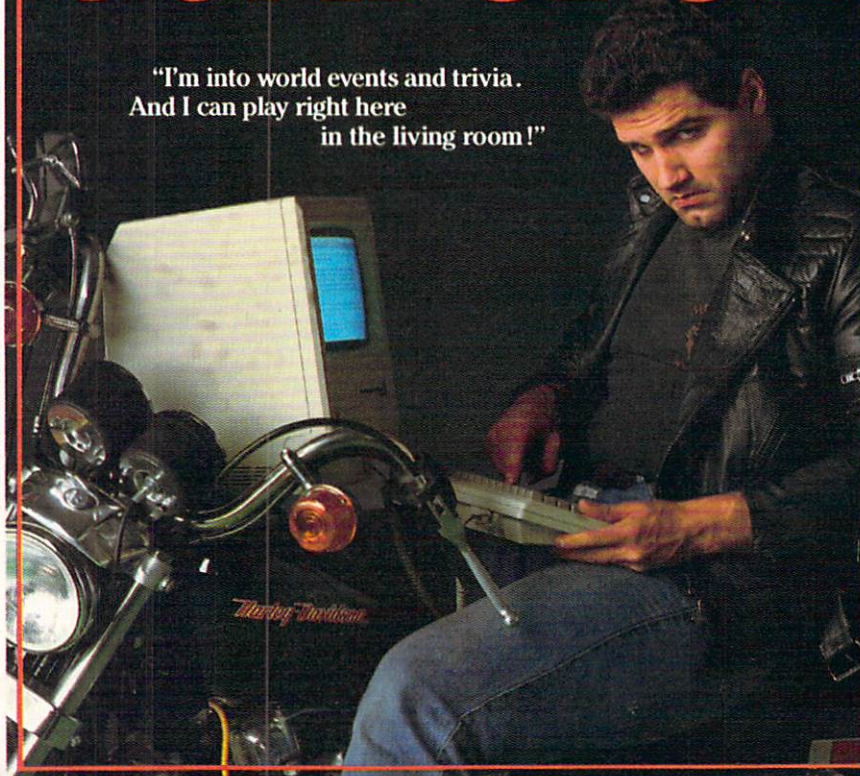
U.S. Department of Education, 400 Maryland Ave. S.W., Washington, D.C. 20202; ([202] 245-3192). Publishes an annual report to Congress on the education of learning-disabled children.

COMPUTOUGH



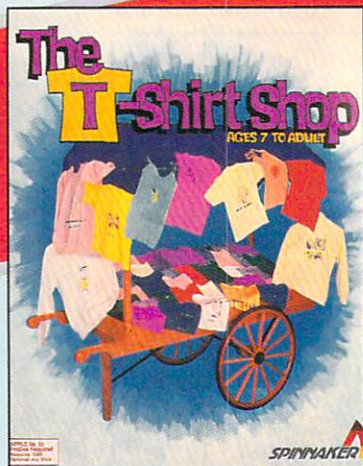
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HOME-SCHOOL CONNECTION

for her disabilities. *Layer Cake* has helped her follow and stick with things such as schedules, according to her mother. "Just yesterday, we used *AppleWorks* to create a schedule for her day, which included everything: getting up, brushing her teeth, getting dressed, catching the bus to school, everything. And she followed it just fine."

And because she can use a word processor, Edy now writes letters. "Her handwriting is very difficult to read, and she knows it," says Vicki. "With the computer, she really enjoys letter-writing."


READING, WRITING, ARITHMETIC

"My wife and I had to use numerous resources and learn new ways of teaching our children how to read and recognize words," says Stefan. "One of the most useful tools we have is our computer."

Software such as *Richard Scarry's Best Electronic Word Book Ever* (Coleco Industries) and FAMILY COMPUTING's own *Word Search* has helped the Gieryn kids in learning letter patterns and word recognition, according to their parents. "I'm happy to say that by using the computer, both of my children have made better-than-average progress in catching up with their delays in speech and vocabulary," says Stefan.

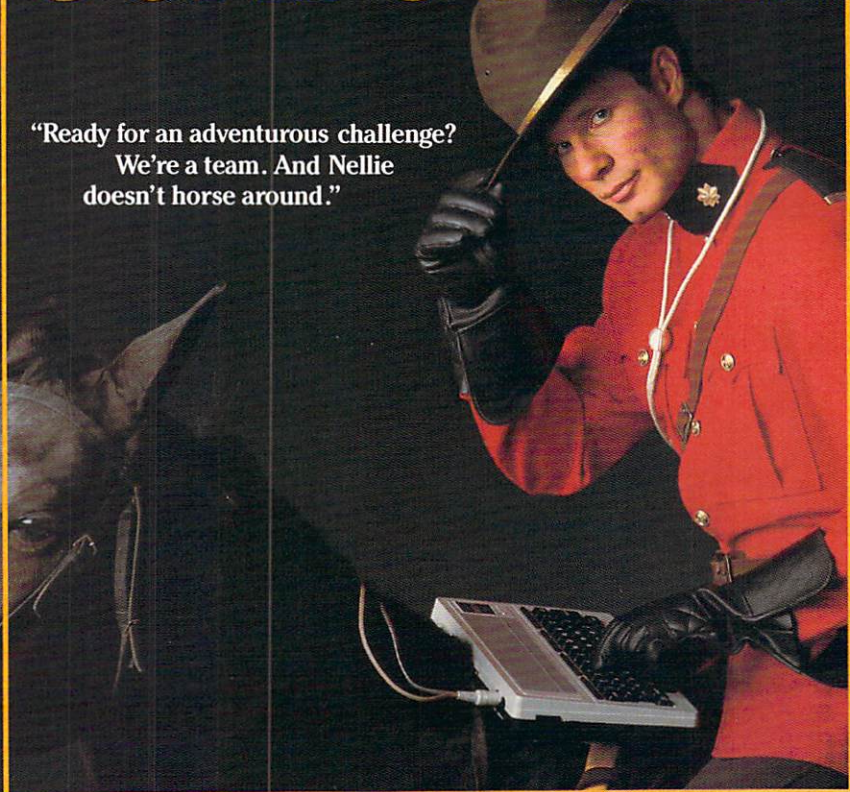
Stefan also claims that fun math programs such as *The Electronic Flash Card Maker* (Coleco Industries) have helped his son Garth boost his math ability up to his appropriate grade level.

A BETTER CHANCE FOR THE FUTURE

The Brodies, Wagners, and Gieryns all sound like irrepressible optimists when they talk about their computers. They have plenty of reasons to bubble. At times, these parents have pushed themselves and their children up against seemingly insurmountable educational barriers. Rather than give up and leave all the teaching to the teachers, they searched for ways around barriers—and found them. Now, instead of obstructions, they see opportunities. "Arthur still has a learning disability, but it changes all the time," says Linda Wagner. "I know my son will have a chance in life, and this chance I believe came from our computer." 

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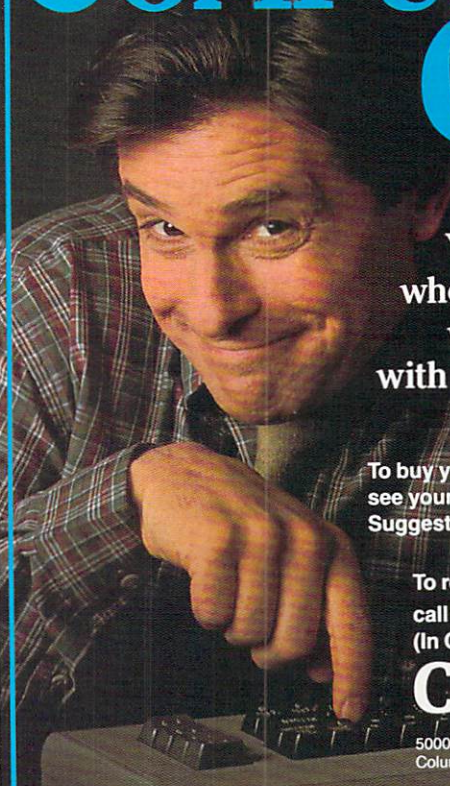
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HOME OFFICE

SELLING YOURSELF

Use Your Computer to Design and Fine-tune Your Resume, Letterhead, and Cover Letters

BY ROGER HART

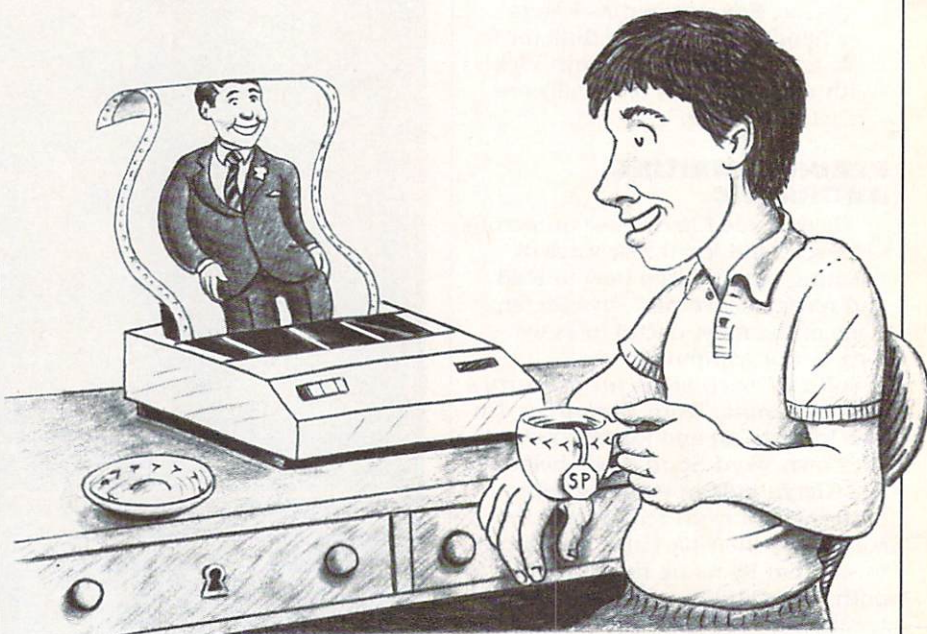
Got something to sell? Your skills? Your services? In the past, you probably typed up a resume (or some such list of your achievements), took it to a type shop, and got 100 or more copies printed. You may have also printed a form letter or flier designed to appeal to a multitude of potential clients or employers.

That method works fine—except that the next time you want to sell your services or look for a job, you'll have to go through the whole process again. Similarly, you may find that your whole analysis of the job market was wrong, leaving you with the task of overhauling your resume to keep up with it.

A computer can simplify, speed, and enhance the difficult task of selling yourself and your ideas. With a word-processing program, you can constantly update and refine your sales pieces and even target them to specific companies in the course of one "sell." When using a Macintosh, Amiga, or ST, or a font-generating program on other computers, you can quickly design simple but effective letterheads.

If you subscribe to MCI Mail, an electronic mail service, you can develop a list of people who will all receive the same letter. It will be laser printed on a facsimile of your letterhead and also display an exact replica of your signature. You can ask for four-hour, overnight, or regular delivery.

All in all, a computer gives you



more control over the final look of your presentation and makes it easier to change it quickly to keep in step with the marketplace and to disseminate your materials.

Here are a few ideas on constructing a resume and cover letter, plus a comprehensive list of firms that will laser print or typeset from a disk.

THE RESUME

Start by making a list of potential employers or clients. Rather than just listing companies, try to get the name of the person who handles requests. At large companies, hiring for each department is usually handled by a different person. If your word-processing program has a mail-merge function, set up the names so that you can later merge them onto a cover letter.

When actually creating the resume or sales piece, don't go overboard with enhancements; use bold for your name at the top of the page and perhaps for the names of past employers or major achievements. Alternatively, you might want to try

underlining for a more subtle means of making information stand out.

Whatever you do, don't try to show off your computer expertise and the many facets of your printer. When in doubt, be conservative. Many Macintosh owners, in particular, get too fancy and use too many font varieties. This can give a resume a flighty, unserious look; it's like wearing a purple and orange polka-dot bow tie or scarf to an interview.

In general, when organizing your resume, you should put the section on job experience first, unless you are fresh out of school. List events in reverse chronological order—with your most recent job listed first. If you supervised people, say how many. If you were asked to train people, put it down.

Place more emphasis on your job experience and less on your education (unless, of course, the job has specific degree requirements). Minimize or even forget personal data; the employer is trying to fill a job, not find a friend or an interesting companion.

Contributing Editor ROGER HART wrote "Desktop Publishing" in the September 1986 issue.

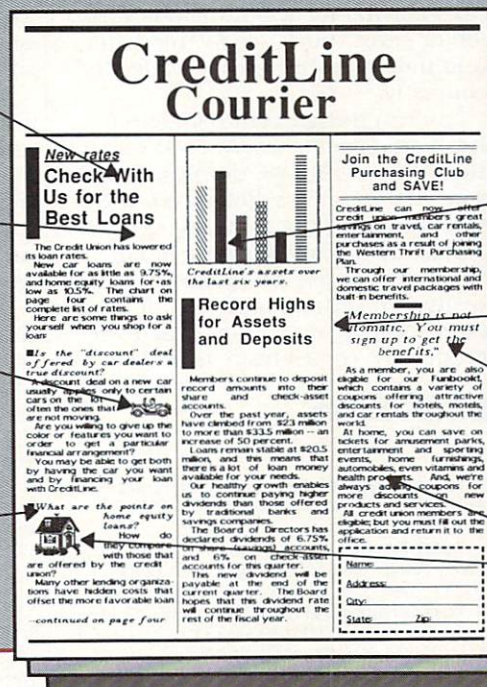
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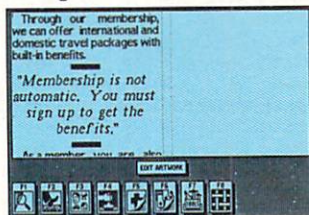
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CIRCLE READER SERVICE 18

HOME OFFICE

In short, your resume should produce a feeling of accomplishment without bragging. After all, you are trying to convince the reader to grant you an interview. Just remember, don't go overboard by listing everything you've ever done.

Use your word processor to customize your resume for different companies. The employment process is essentially a negative one. Employers often look for reasons to throw resumes out. The closer your resume is targeted to a specific job, the greater the chance it will make it through the screening process.

THE COVER LETTER

Whether you are sending a resume

to a prospective employer or a proposal to a client, you should write a cover letter. It serves as an introduction to the enclosed material and explains why you are sending it. If you are applying for a job, include your job or career objective in this letter and indicate what you can offer the company.

You can design your own letterhead on a computer. At least one national chain (AlphaGraphics, Tucson, Arizona; [602] 882-4100) will let you come into the store, sit down at a Macintosh, and design a letterhead, envelopes, and business cards using *MacDraw*, *MacWrite*, or *MacPaint*. Then, you can laser print reproducible copies from your disk.

You may or may not save money this way; the chief advantage is that you have more control over the final product. You can, for instance, insert a logo of your own design. Most type shops offer a variety of pre-designed, "canned" letterheads, none of which may appeal to you.

You can also create your own letterhead quickly at home if you use a computer or program that allows you to generate different type styles and sizes. Set your name, address, and phone number in one type style and size. Times Roman, 18-point bold, is a solid choice.

Then, use a different type style and size for the body of the letter. A 12-point Courier type style is the standard used for typewriters, if you want that look.

PRINTING SERVICES

[1] Apple LaserWriter Printing; [2] Typesetting; [A] Macintosh disk; [B] IBM PC & comp. disk; [M] Accepts files by modem; [R] Rents computer time.

Advanced Computer Graphics, 1260 Boylston St., Boston, MA 02215; (617) 437-6470. [1], [2], [A], [B], [M].

Alphabet Soup, Inc., 900 North Point St., San Francisco, CA 94109; (415) 885-3156. [1], [2], [A], [B], [M].

AlphaGraphics, 845 E. Broadway, Tucson, AZ 85719; (602) 882-4100 (other locations). [1], [2], [A], [R], [M].

Aptos Post Typography, 8058 Valencia St., Aptos, CA 95003; (408) 688-7474. [2], [A], [B], [M].

Computer Concepts, 3954 Calle Buena Vista, Newbury Park, CA 91320; (805) 499-0583. [1], [2], [A], [B].

Copy Ink, 1060 Willow St., San Jose, CA 95125; (408) 275-6933. [1], [2], [A], [R], [M].

DaVinci Graphics, 6175 N.W. 57th St., #213, Fort Lauderdale, FL 33319; (305) 721-0216. [1], [2], [A], [B], [M].

Design & Type, 739 Bryant St., San Francisco, CA 94107; (415) 495-8973. [1], [2], [A], [B], [M].

Desktop, Inc., P.O. Box 4707, Boulder, CO 80306; (303) 938-9299. [1], [2], [A], [B], [M].

Desktop Publishing & Design, 96 South St., Boston, MA 02111; (617) 482-2122. [1], [2], [A], [B], [M].

Desktop Studios, 89 N. Main St., Andover, MA 01810; (617) 470-3032. [1], [A], [B], [R].

Expertype, 44 W. 28th St., New York, NY 10001; (212) 532-6222. [1], [2], [B], [M].

G & G Laser Typesetting, 1030 Congress St., Portland, ME 04102; (207) 774-7338. [1], [2], [A], [R], [M].

Graphic Arts Associates, 575 Hope St., Stamford, CT 06907; (203) 348-9197. [2], [B], [M].

The ImageSetter, Div. of Designer's Eye, 440 Humphrey St., Swampscott, MA 01907; (617) 592-1234. [1], [2], [A], [R], [M].

Intergraphics, 106A So. Columbus St., Alexandria, VA 22314; (800) 368-3342. [2], [B], [M].

Kinko's, 4141 State St., Suite B, Santa Barbara, CA 93110; (800) 292-6640 (in CA) and (800) 235-6919; other locations. [1], [2], [A], [R], [M]. Services vary from store to store.

Krishna Copy Center, 2111 University Ave., Berkeley, CA 94704; (415) 540-5959. [1], [2], [A], [B], [R], [M].

Laser Designs Corp., 1430 Massachusetts Ave., Suite 209, Cambridge, MA 02138; (617) 868-0222. [1], [2], [A], [B], [R].

Laser Printing Services, 26058 W. 12 Mile Rd., Southfield, MI 48034; (313) 356-1004. [1], [2], [A], [B], [R], [M].

LaserType Corporation, 227 E. 45th St., New York, NY 10017; (212) 949-7413 and (201) 495-6640 (in NJ). [1], [2], [B], [R], [M].

MacTography, 702 Twinbrook Parkway, Rockville, MD 20851; (301) 424-3942. [1], [2], [A], [R], [M].

MacTypeNet, P.O. Box 52188, Livonia, MI 48152; (313) 477-2733. [1], [2], [A], [B], [M].

OfficeTalk, 345 Montgomery Ave., Bala Cynwyd, PA 19004; (800) 345-0133. [1], [2], [A], [B], [M].

PageWorks, The Garage/3rd Floor, 36 J.F.K. St., Cambridge, MA 02138; (617) 868-2943. [1], [2], [A], [B], [R], [M].

Personal Computer Resources, 45 Pond St., Norwell, MA 02061; (617) 871-5396. [1], [2], [A], [B], [R].

Personal Processing Inc., 5 J.F.K., Suite 306, Harvard Sq., Cambridge, MA 02138; (617) 876-7007. [1], [2], [A].

Pipe Creek Publications, Inc., 533 Lincoln Center, 7800 IH-10 West, San Antonio, TX 78230; (512) 349-0661. [1], [2], [A], [B], [M].

ProTypography, Inc., 361 W. Superior St., Chicago, IL 60610; (312) 266-8973. [1], [2], [A], [B], [M].

Software Output Services, 12 E. 46th St., New York, NY 10017; (212) 697-4450/529-3377. [1], [2], [A], [B], [R], [M].

Southwestern Typographics, 2820 Taylor St., Dallas, TX 75226; (214) 748-0661. [1], [2], [A], [M].

Spectrum Arts Ltd., 1823 Eutaw Place, Baltimore, MD 21217; (301) 462-6900. [1], [2], [A], [B], [M].

Typeline, 170 State St., Teaneck, NJ 07666; (201) 837-9839. [1], [2], [A], [B], [M].

Typesetting Service Corp., 50 Clifford St., Providence, RI 02903; (401) 421-2264. [1], [2], [A], [B], [M].

U-Design, 201 Ann St., Hartford, CT 06103; (203) 278-3648. [1], [2], [A], [R], [M].

Write Solutions, 4141 State St., Suite D2, Santa Barbara, CA 93110; (805) 967-0487. [1], [2], [A], [R].

THE PRINTOUT

You wouldn't go for a job interview or on a sales call without looking your best. Since your printed presentation is the stand-in for you, it should look well thought out and well groomed. Ideally, this means using a letter-quality (daisywheel) printer to produce the final copy.

However, you shouldn't necessarily rule out dot-matrix printers. The newer 24-pin models (see "Buyer's Guide to Printers" in this issue) have a clear "near letter-quality" mode. Don't be afraid to use it. I questioned a variety of personnel managers at both small and large companies. These managers concurred that resumes printed with a dot-matrix printer are common today. Most managers said that clean and easily readable material is more important than whether a resume is printed with a letter-quality printer.

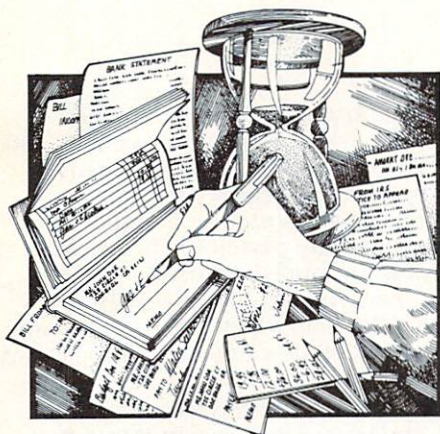
Many computer stores and copy centers will let you use their laser printers for a reasonable fee. Laser printers can print material very close to typeset quality. Some firms will laser print from disks received in the mail (see the sidebar). Most of these services require a Macintosh or IBM PC disk that has been prepared with a word-processing program compatible with laser printers. The final product will be nearly as good as typeset copy and considerably less expensive.

No matter what kind of printer you choose, use a good, high-quality bond paper and a fresh ribbon. After all, you want a manager's first impression to be a lasting impression—not the last one. **E**

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PERSONAL FINANCE

A SOUTH CAROLINIAN AND HIS NEW YORK BANK Linking Electronic Banking and Home-Finance Software Brings out the Best of Both

BY STEPHEN MILLER

Like thousands of others, Henry Knight, Jr., an assistant U.S. attorney in South Carolina, purchased his computer to help keep track of his money. He thought the record keeping and calculation ability of a home-finance program would streamline the process.

The program, *Managing Your Money (MYM)*, has certainly done that. What Knight couldn't have predicted is that he would become a pioneer of sorts. He's now an electronic customer of a big and distant New York bank and exchanges financial data between his home-finance software and the bank.

"It's a great arrangement—so convenient," says Knight, who lives in Columbia, South Carolina. "I'm going with a New York bank, so I'm closing all my local bank accounts except one, which will let me cash a check. I'm pretty conservative, so for me to allow a New York bank to direct-deposit my paycheck means they're doing something right."

Chase Manhattan, Knight's new bank, and other large banks with electronic banking services (e.g., Bank of America and Citibank) have set up links between their services and the best-selling home-finance programs (see box). While home-banking subscribers number just 70 thousand, according to *American Banker*, several hundred thousand home-finance programs have been sold, led by *MYM* (about 150,000 copies) and *Dollars and Sense* (about 200,000 copies). As a result, banks have much to gain by promoting the link.

LOTS OF CHECKS

Knight's first use of *MYM* was to keep track of his checking activity. Knight writes quite a few checks every month, partly as a result of helping his mother manage her finances. "I didn't want to have to write a lot of checks by hand and certainly didn't want to have to keep track of all



Henry Knight Jr.

those checks," Knight says.

Even though he had a modem, Knight had to warm up to the idea of electronic home-banking service when it was first offered. Besides entering a check in the finance program and/or listing it in his checkbook, Knight felt it would be too much trouble to enter the check a second or third time with the banking service.

Knight's local bank had a pay-by-phone service that allows the user to call on a touch-tone phone and punch in codes for bills to be paid. Knight tried it, but didn't like the service's offerings. The bank doesn't accept insurance-premium payments, he says, and the system still doesn't solve the "double-entry" problem. Knight wanted to enter information once and then send it directly to the bank. That's when New York's Chase Manhattan Bank came into the picture.

Chase designed its Spectrum home-banking service to accept data from *Managing Your Money 3.0*, a new version written specifically to work with Chase. Spectrum is avail-

able through a toll-free number (both for electronic transactions and customer support from humans) and in many cases can arrange direct deposits of payroll funds. Thus, out-of-state payroll funds are available for immediate use.

As Gerald Rubin, president of MECA, points out, "The service can be useful for a number of people, not just New Yorkers."

Knight was skeptical about the Spectrum service when it was first offered, but because of his faith in *MYM*, he decided to give it a try. His biggest worry was that a big New York bank wouldn't give him the level of needed service. "I tend to judge a bank by the level of its customer support and so far it's been outstanding," he says.

MAKING A TRANSACTION

Knight is also thrilled with the way Spectrum works with *MYM*. He boots up *MYM* and from his list of payees marks which bills are to be paid. (For recurring transactions such as mortgage and credit card payments, the account numbers and mailing addresses for each payee are entered only once, when setting up the program.) Now that Knight is a Spectrum subscriber, Knight tells *MYM* to set up those payments as items to be sent to Spectrum for actual payment.

Then, sitting at home in South Carolina, he calls Spectrum using a toll-free number. An option on the menu screen lists *MYM*. After Knight

BANK-FINANCE SOFTWARE LINK

Service*	Monthly Fee	Software Link	System Software/Price
Bank of America's HomeBanking (800) 792-0808 (on-line demo available)	\$8	<i>Dollars and Sense</i> (Monogram) with <i>Moneyline</i>	Apple II, IBM, Mac \$100-\$180
Chase Manhattan Spectrum (800) 645-6300 (outside New York) (800) 632-2515 (in New York)	\$5	<i>Andrew Tobias's Managing Your Money 3.0</i> (MECA)	IBM PC/PCjr & comp. \$200
Citibank Direct Access (800) 255-0355	\$10	<i>Dollars and Sense</i> with <i>Moneyline</i>	Apple II, IBM, Mac \$100-\$180

STEPHEN MILLER writes the monthly Tandy column in *Machine Specifics*.

*All services have toll-free access for computer users.

selects that option, the rest of the operation is automatic. Spectrum reads the disk and uploads the information about the bills to be paid.

As Spectrum receives the information, it tells the user exactly what is happening. For example, if Knight were paying his department store accounts, Spectrum would reply: "READING STORE #1, STORE #2," etc.

Thus, Knight can pay bills without writing a check, filling in a register stub, addressing an envelope, licking a stamp, or trudging to a mailbox. And when he's finished, he has a complete record of the transaction—both on-line at the bank and at home on his MYM data disk.

GETTING INSIDE THE BANK

Besides sending information directly to Spectrum, you can also receive it directly on your MYM disk. You can download your account balances and determine when checks cleared or what bills have been paid. "You can ask Spectrum for the particulars on any one account and download it to MYM," explains Knight. "I do this any time I want to reconcile my accounts."

You can also download data from Citibank's Direct Access and Bank of America's HomeBanking into Monogram's *Dollars and Sense*. However, you need another program called *Moneyline* (\$50; Monogram) to implement the download.

MECA's Rubin says that the Spectrum/MYM link works best for people who have active checking accounts. "If you write a lot of checks or do a lot of things through Spectrum [such as transferring money between accounts], it can really simplify your life," he explains.

A PILOT PROGRAM

Both MECA and Chase stress that the current program is in the evaluative stage. If the program gets good response, Rubin says it's possible that MECA will make MYM available to other home-banking services. Chase officials say links with other home-finance programs are also possible if this experiment meets expectations and customers with other programs show sufficient interest.

As for Knight, who says he's already convinced seven friends to sign up for Spectrum, his only concern is that as the service gets more popular—he'll get a busy signal when he calls. ☐

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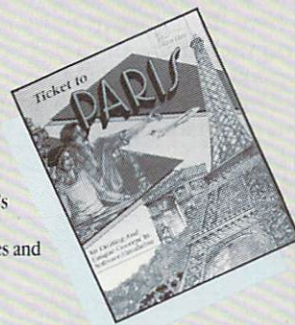
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CIRCLE READER SERVICE 7

MAY 1987 17

TELECOMPUTING

TRAVEL PLANNING'S CLIPPER SERVICE

Use Your Modem to Browse and Book Flights, Hotels, and Rental Cars **BY NICK SULLIVAN**

When you go to an airline ticket counter or call a travel agent, a clerk coaxes information out of a computer and matches it to your needs. With the proper keystrokes (the familiar tap-tap-tap over the phone), the clerk can usually book you a certain seat on a certain flight and reserve a hotel room and a rental car.

You can now do the same thing at home—if you have a computer, a modem, and a subscription to any electronic information service. In fact, you can use virtually the same system that travel agents and airline reservation clerks use—the Official Airline Guides' Electronic Edition, Travelshopper, or American Airlines' EAASY SABRE (see the accompanying chart for details). All three are slightly modified versions of the computerized booking systems used by travel agents.

Consumers have been able to make electronic reservations themselves for about a year now, so the services are still testing their wings. Initial responses from users vary widely and seem to depend on the type of relationship one has with a travel agent.

"I find that the electronic OAG gives me excellent service, with tickets delivered within two days, according to my seating preferences," says Don Iodice, a professor who lives outside Detroit. "Local travel agents here do not seem to be interested in much more than tours. I have forsaken them for OAG."

Bruce Drake, a newspaperman who lives in Washington, D.C., has a

different view: "I find the electronic OAG cumbersome to use; it's easier and cheaper to pick up the phone and call an agent."

BOOKING A FLIGHT

In essence, on-line reservations systems are easy to use. You just enter your departure city, your destination city, and the class of service requested. (If you want to, you can request a specific airline.) Then you're given a list of fares, from lowest to highest. When you see one you like, you can request more information, such as the flight number, the restrictions, and the stopovers.

In practice, however, this relatively simple process can be confusing even for those comfortable with electronic services. Each booking system uses different commands, and they, in turn, are different from the commands used by the host service. For instance, OAG commands differ from those of Dow Jones News/Retrieval, EAASY SABRE commands differ from those of GENIE, and Travelshopper commands differ from those of CompuServe.

Once you master navigation, you then have to decipher airline fare and seating codes. By pressing a few keys and following on-screen directions, you can have them explained, but this costs you time and money. Of course, with so many airlines, flights, and special fares and restrictions, it's not hard to see why the schedules are so confusing.

"For some city pairs, such as Boston-Atlanta, there are more than 100 fares available," says Fred Levinson, president of Interactive Office Sys-

tems, which has designed The Electronic Connection travel service for Delphi, and other corporate systems. "And some might be seven-day advance-purchase Super-Savers not available on Fridays."

Once you find a flight you like, you can book it by entering your credit-card information, seating and eating preferences, and the flight details. You can have the tickets mailed to you or you can pick them up at a travel agency or airline desk.

ELECTRONIC TRAVEL AGENTS

In general, the most satisfied on-line travel planners seem to be those who electronically browse airline schedules and then purchase tickets by phone. "I sometimes look at OAG at the office and then call American Airlines directly," says C.M. Bates, a CompuServe user.

He is not alone. According to John Matura, a product marketing specialist at CompuServe, which has a wide range of travel services, a lot of corporate users act this way—in the end booking through a travel agent. Matura says another active user is the small- or home-business operator who might need quick cost estimates on travel.

Delphi offers an electronic travel agent to those who like the convenience of electronic access, but don't want to spend time mastering the airlines' systems. Whether you check the on-line travel schedules or not, you can type in a plain-English "instant message" asking for trip arrangements, including details on hotels and theater tickets. Within 24 hours, a travel agent responds via

NICK SULLIVAN is senior editor of FAMILY COMPUTING.

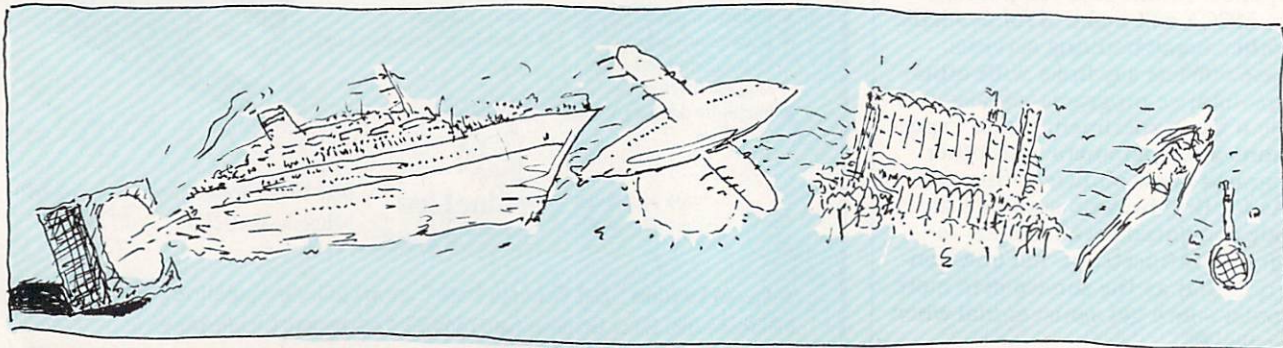


ILLUSTRATION BY JERRY McLAUGHLIN


electronic mail with "preliminary" reservations; you can either confirm or reject the plans.

HOTEL INFO

Airline information is easier to come by than hotel information. You can call a travel agent and ask for the lowest fare to Kansas City, but you probably can't ask that agent to recommend a good hotel or restaurant there. Searching by computer for the right spot in a strange city makes a good deal of sense; you get more information faster than you could any other way.

The ABC Worldwide Hotel Guide (on CompuServe) and the Mobil Hotel Guide (on The Source) provide excellent listings of top hotels in major cities. You can get descriptions of each hotel—with listings for room rates, health/fitness facilities, restaurants, and ratings and an 800-number for reservations.

Better yet, you can search the list

to find just the offerings that meet your requirements. For instance, you could search for TENNIS and get a list of hotels with tennis courts. (Neither hotel service allows you to make on-line reservations.) Then you'll begin to see that one of the best uses of the computer for travel planning is exploration. Ipanema, Paris, Baja—check the air fares and hotels while your mind wanders down beaches and art-lined avenues. 

TRAVEL PHONE NUMBERS

American Express Advance, (800) 327-2177; CompuServe, (800) 848-8199; (614) 457-0802 in Ohio; Delphi, (617) 926-9400; Dow Jones News/Retrieval, (609) 452-2000; GENie, (800) 638-9636; EAASY SABRE, (817) 540-7964; (800) 331-2690; (800) 722-4577 in Oklahoma; Official Airline Guides, (800) 323-4000; The Source, (800) 336-3366; (703) 734-7500 in Virginia; Travelshopper, (800) TWA-HELP; QuantumLink, (800) 392-8200; (703) 448-8700 in Virginia; Visa Advisors, (202) 797-7976.

ON-LINE TRAVEL INFORMATION

Service	On-Line Connection ²	Comments
AIRLINE SCHEDULES/FARES/RESERVATIONS		
Official Airline Guides ¹	CS, DJN/R, DIALOG, Source, Delphi	750 airlines; hotel and car rental reservations through Thomas Cook
EAASY SABRE	Delphi, GENie, QuantumLink	650 airlines; hotel and car rental reservations
Travelshopper	CS	All bookings except United, Singapore, South-West Airlines
HOTEL INFORMATION		
ABC Worldwide Hotel Guide	CS	Rates, facilities, and no. of rooms for nearly 30,000 hotels around the world; keyword searching
Mobil Hotel Guide	Source	Rates, facilities, and general information on U.S. and Canadian hotels; keyword searching
TravelData	GENie	Hotel and restaurant information for 150 cities worldwide
SPECIAL TOURS/INFORMATION		
American Exp. Advance	CS, DJN/R, GENie	Package tours, gifts, travelers checks
Discover Orlando	CS	Travel information for central Florida and Walt Disney World; accommodations, attractions, and campground listings
Pan Am Travel Guide	CS	International immigration and health requirements
Visa Advisors	CS	Visa/Passport information, applications, and processing
TravelVision	CS	Order road maps/atlas for North America; routing services
Sun 'N Sand Vacations	CS	Florida, Hawaii, Mexico package tours; Caribbean cruises
The Electronic Connection	Delphi	Leave messages for travel agents requesting flights, car rentals, hotels, theater tickets, visa applications, etc.; city/country profiles
ON-LINE TRAVEL SIGS		
Travel Forum	CS	Interactive bulletin board for heavy/frequent travelers
Florida Forum	CS	Interactive bulletin board run by Florida Tourism Dept.
Foreign Language SIG	Q-Link	Interactive bulletin board for international travelers

KEY TO CHART

CS=CompuServe, DJN/R=Dow Jones News/Retrieval;

¹ Where applicable, surcharges levied. ² Connect-time charges vary.

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MACHINE SPECIFICS

NEWS, OPINIONS, QUOTES, & RUMORS

APPLE

BY CHARLES H. GAJEWAY

Thanks for the mail, and keep it coming, either to the magazine, or electronically. Many questions from readers revolve around increasing the performance of an 8-bit Apple II for a business-oriented application. Indeed, since business applications rarely require advanced graphics or sound, expanding an existing computer with carefully chosen peripherals—rather than buying a brand new computer—can be a cost-effective solution.

Applied Engineering. While high-performance Apple II peripherals are nothing new, Applied Engineering products have become extremely popular during the past couple of years. They can add a lot of oomph to an Apple II Plus, IIe, IIc, or IIGs. (Stay tuned for next month's review of IIGs memory expansions.)

Applied Engineering produces three memory expansion products: RamWorks III, RamFactor, and Z-RAM. The board you choose depends on which machine you have and your intended application. All three boards include RAMdisk and *AppleWorks* expansion software at no extra cost and can be equipped with a 16-bit processor to allow software like *VIP Professional* (the 1-2-3 workalike) to address the expanded memory directly.

IIc Expansion Champ. RamWorks III (\$179–\$369, depending on memory) is the *AppleWorks* expansion champ. The board plugs into the auxiliary slot of an Apple IIc and provides up to 1 MB (one megabyte) of extra memory and 80-column video display. Expansion modules are available for RGB output and additional memory. The *AppleWorks* expansion software with the RamWorks board permits up to 23,000 records in the data base and 23,000 lines in the word processor—versus the normal 1,350 records and 2,250 lines.

IIc Memory Expansion. Z-RAM is a IIc product that comes in three models: Ultra I (\$199–\$249), with up to 512K RAM; Ultra 2 (\$269–\$399), with up to 1 MB and a ProDOS clock; and Ultra 3 (\$329–\$459), which adds CP/M capability to Ultra

2. An Ultra 1 cannot be upgraded to a 2 or 3. Z-RAM's memory enhancement offers the same capabilities as RamWorks, and any software that recognizes RamWorks will work on an equal par with Z-RAM.

II Plus and AppleWorks. The RamFactor (\$239–\$289) board holds up to 1 MB and can plug into any Apple II or compatible (including the Laser 128) with standard Apple expansion slots. The *AppleWorks* expansion software modifies the program to permit its use on an Apple II Plus equipped with an 80-column video adapter and allows up to 5,300 database records and 5,300 word-processing lines.

All of Applied Engineering's peripheral boards carry an exceptional five-year guarantee. The company will install new memory chips in your board for free and guarantee them for five years (most chips are guaranteed for 90 days at most). I'll report more fully on my tests next time, but all products worked well and produced generally impeccable results. I was impressed not only by Applied Engineering's products but by just how much you can really do with an 8-bit II!

CHARLES H. GAJEWAY can be reached on *The Source* (ID: BB9794) or on *Genie* (ID: C GAJEWAY).

ATARI

BY JOHN J. ANDERSON

Three big pieces of news come from Atari.

First, the new Mega ST series, which should be available soon, if not already, is a more professional, compact, and easier-to-expand version of the popular Atari ST machine. The new model will be sold in 1-, 2-, and 4-megabyte configurations.

The keyboard is detached from the system unit and has a much better feel than its predecessor. The Mega ST also includes a battery-backed real-time clock, a graphics blitter chip, which allows for faster "drawing" of graphics images on screen and a bus for plugging in add-on boards.

The Mega ST's smaller footprint was achieved by packaging the CPU, floppy disk drive, and power supply



Atari PC



Atari Mega ST

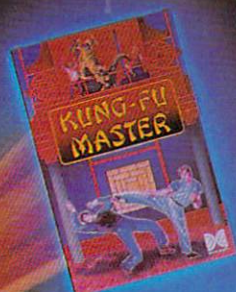
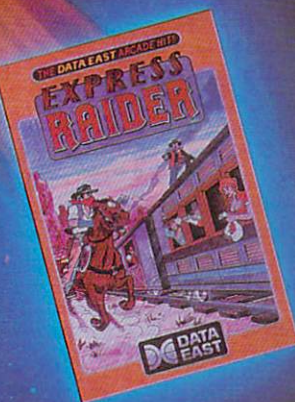
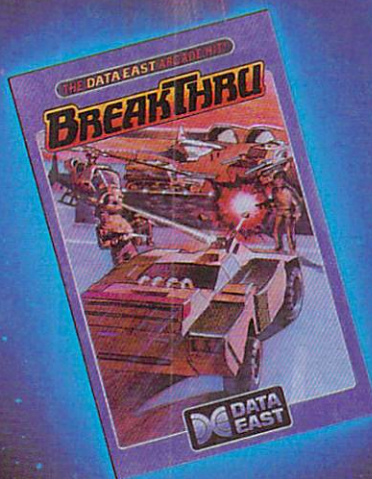
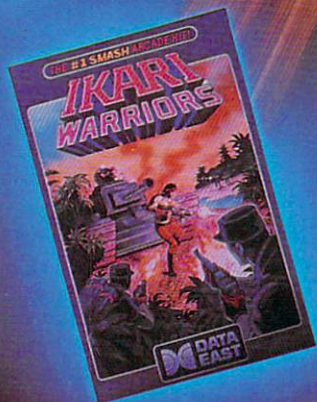
in a module that serves as a pedestal for the monitor. Atari also plans to sell a hard disk drive that can be stashed on top of the system unit.

Desktop Publishing. The second bit of news is that Atari intends to attract the growing desktop publishing market with an advanced system that will cost half the price of comparable products. In order to achieve this goal, the Mega ST computer will be matched with the new Atari Laser Printer. It was on display at the Consumer Electronics Show in Las Vegas last January, and despite some downtime, churned out high-quality copy. Atari's intention is to sell the complete system—including computer, printer, drive, and monitor—for under \$3,000. The 300 dots-per-inch laser printer will sell for under \$1,500. The target for delivery is late spring.

Because of the speed and memory of the Mega ST, the laser printer can be software-driven and needs fewer of its own internal "smarts"; the result is that Atari reduced the cost of the printer and got greater versatility.

IBM-Compatible PC. Atari has also announced two models of the Atari PC, IBM-compatible systems. One comes standard with 512K (expandable to 640K), one internal disk drive, and a monochrome monitor,

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CIRCLE READER SERVICE 12

MACHINE SPECIFICS

priced at \$699. The other system, sans monitor, comes with 256K (expandable to 640K), and sells for \$499. The systems run at two speeds, either 4.77 (the normal IBM PC speed) or 8.0 megahertz. An external 5 1/4-inch floppy disk drive will be sold separately.

The Atari PC is the first IBM PC-compatible product that includes support for the EGA graphics mode as a standard feature. The \$499 model does not support EGA, however, but supports and includes CGA. Of course, an EGA monitor will cost about as much as the rest of the computer. Other graphics modes supported by the custom-designed graphics chip are CGA, IBM monochrome, and the Hercules graphics card.

While there are no expansion slots, Atari has included a built-in Centronics parallel port for printers and an RS-232 serial port for modems and serial printers.

The unit will ship with a detachable IBM-style keyboard, a mouse, and mouse port. GEM software from Digital Research, an IBM version of the system software that the ST uses, will also be included. MS-DOS is included; users won't have to buy this necessary system software somewhere else.

JOHN ANDERSON can be reached on CompuServe (ID: 76703.645).

COMMODORE

BY SHAY ADDAMS

Into the battle of the PC compatibles marched Commodore this spring, led by two budget versions of the IBM XT. Both have been marketed in Europe for several years. The PC 10-1 (\$999) gives you 512K and one 5 1/4-inch drive. The PC 10-2 (\$1,199) offers 640K and a pair of drives. Both computers are packaged with the DOS 3.2 operating system and Borland's *SideKick*, a set of memory-resident utilities. Each has five internal slots for peripheral cards; one slot is already occupied with a graphics card for monochrome and color display (not EGA). There is room and power in each unit for a 30-megabyte hard drive.

New 128. Another European "import," the C 128D, has a detached keyboard and a built-in disk drive. The biggest differences between the

D model and the wedge-shaped 128 are that the D looks nicer and you can put the keyboard in your lap. The 128D costs about \$550, compared to \$299 for the plain 128.

DeluxePaint II For Amiga. Electronic Arts ([415] 571-7171) has released *DeluxePaint II* (\$130) for the Amiga (with 512K). It introduces more than 50 new features. Now you can zoom in and edit on the pixel level and create pictures larger than the screen size (up to 8 1/2 x 10 inches). *DeluxePaint II* comes with a disk of clip art.

Amiga gamers will appreciate that the graphics in *The Bard's Tale*, also from Electronic Arts, were completely revamped for the Amiga version and not just converted bit by bit from the original C 64 program.

Mailbag. James Rizley, of Columbus, Ohio, asks, "Where can I find a hard disk for my C 64?" Xetec's Lt. Kernal ([913] 827-0685; \$900-\$950), a 20-megabyte hard drive, is more than 60 times faster than the 1541 when used with the 64 and even faster when running the 128 in 128 mode. ICT's Data Chief comes in 10- and 20-megabyte models ([301] 371-4000; \$895-\$995). The Data Chief's main feature is GEOS compatibility.

There's also ST10C's 10-megabyte model from Computer Specialties ([305] 725-6574; \$895) and Progressive Peripherals' 10-megabyte Device 9, called The Vault ([303] 825-4144; \$895).

Habitat Postponed. The debut of *Habitat*, Lucasfilm's multiplayer and on-line game that was being tested on QuantumLink, has been postponed.

SHAY ADAMS, editor of *Questbusters*, an adventure game newsletter, can be reached on CompuServe (ID: 72267.601) or on QuantumLink (ID: JBCHALMER).

IBM

BY HENRY BEECHHOLD

A reader asks how to set up a bulletin board system (BBS) to accept telephone calls from modem-equipped computers. You can set up a BBS using any computer with a disk drive and at least 64K of memory. But if I were setting up a BBS, I'd want at least 256K RAM, a floppy disk, and a 10-megabyte hard-disk drive. And, of course, you need an

auto-answer modem.

BBS Software. For IBM PCs and clones, one of the best (and least expensive) programs around is *RBBS-PC* (Remote Bulletin Board System for PC). Designed by members of the Capital PC Users' Group, *RBBS-PC* is available from Capital PC Users' Group Inc. (P.O. Box 6128, Silver Spring, MD 20906; [301] 656-8372). Send \$8 and a mailing label. You can also order the program from PC-SIG (1030 East Duane Avenue, Suite D, Sunnyvale, CA 94086; [408] 730-9291 or [800] 245-6717). The four-disk program costs \$6, plus \$4 for shipping.

Documentation on the *RBBS* disk will explain all you need to know to get started. Serious BBS system operators, however, will also want to buy Alfred Glossbrenner's compendious *Complete Handbook of Personal Computer Communications* (St. Martin's Press, New York, NY 10010; [212] 674-5151, ext. 312; \$14.95).

HENRY BEECHHOLD is the author of *The Brady Guide to Microcomputer Troubleshooting & Maintenance* (Simon & Schuster).

MS-DOS

BY STEVE MORGENSTERN

As hard-disk prices plummet from a couple of thousand to several hundred dollars, more and more of us have abandoned fumbling with floppies for the large capacities and quicker access times of hard-disk drives. Of course, trusting your files to a platter spinning at 3,600 revolutions per minute with a magnetic head perched a fraction of an inch above does have its risks. I've heard horror stories of disk crashes, obliterated files, and other nastiness. Backing up the files from your hard disk onto floppies is a partial solution. Hard-disk utility programs are another.

The Norton Utilities (from Peter Norton Computing, Inc.; [213] 453-2361; \$99.95) is the best-known, best-selling data recovery and disk management package for MS-DOS computers. It will mark off any bad sectors on your hard disk (they all have some) and keep DOS from using them, sort your directory, and most important, undelete files you accidentally erase from a hard disk or floppies.



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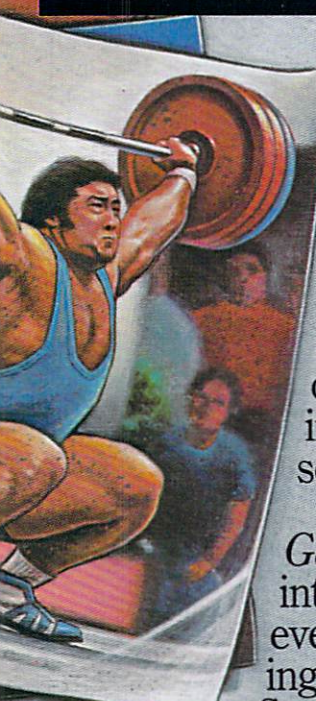
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MACHINE SPECIFICS

The package I use for my system, *Mace Utilities* (Paul Mace Software; [503] 488-0224; \$99) offers the above features, plus the ability to restore your disk even if you accidentally issue the DOS FORMAT command (and thus wipe out the contents of the hard disk).

Neither utility should be considered a replacement for regularly backing up your data onto floppies. However, both are valuable safety nets and provide additional, useful features.

Incidentally, the reason you can "undelete" files at all is that DOS doesn't actually erase a file when you issue the ERASE command. It just changes the first letter of the file name to an obscure ASCII character and indicates when the section of the disk that contained your file is available to be overwritten. Until DOS reuses the space, though, the information is still on the disk.

Scanning for Scanners. For the Macintosh, a clever gizmo called ThunderScan has been a big hit for quite a while now. By replacing the ImageWriter printer ribbon cartridge with a scanning device, ThunderScan travels back and forth across a page fed into the printer, converting the picture into digital information and feeding it to the computer. It's an inexpensive way to transfer images from a piece of paper onto your computer screen.

Now MS-DOS computer users with certain Epson printers can finally do the same trick. The Epson Image Scanner Option Kit (\$300) is a scanner for the Epson EX-800, EX-1000, and LQ-2500 printers. The system comes with a program called *Inset* that enables users to insert graphics into word-processing or spreadsheet documents.

For Epson FX-80/85 owners, E. Arthur Brown Co. ([612] 762-8847) has announced a scanner that works on the same principle. PC-PictaScan (\$150) produces files compatible with popular PC paint programs.

New Game Releases. As MS-DOS computers continue to sell, software companies continue to convert old-time favorites to MS-DOS format. New conversions include *Where in the World Is Carmen SanDiego?* (Broderbund), *Wizard's Crown*, *Phantasia*, and *Shard of Spring* (Strategic Simulations).

Contributing editor STEVE MORGENSTERN can be reached on CompuServe (ID: 72545.606).

TANDY

BY STEPHEN MILLER

As mentioned in previous columns, most CoCo 1 & 2 software will run on the CoCo 3, but because there are significant differences in the way the CoCo 3 works, some programs may not run properly. Most of the problems have to do with the way older models generate color, but there are also differences in the operating system that can prevent some packages from running at all.

According to Radio Shack, the following software will not run on the CoCo 3, and Radio Shack is not planning to upgrade or fix these programs: *Appliance/Light Controller*, *Art Gallery*, *Audio Spectrum Analyzer*, *Cyrus*, *Diagnostics ROM*, *Downland*, *DragonFire*, *Kidwriter*, *Music*, and *Videotex*.

If you discover any other candidates for the above list, drop me a note at P.O. Box 782, Adelphi Station, Brooklyn, NY 11238.

OS-9 Update. It's unclear why there's been a delay in shipping OS-9 Level II for the CoCo 3, but some things are clear. You must purchase Level II if you have a CoCo 3 and want to use OS-9. Level I won't work on the CoCo 3. Second, the lag in Level II availability is causing delays for third-party software developers. They are unable to furnish the "run time" version of OS-9 Level II, which allows their programs to run on CoCos without OS-9.

1000 EX Second Drive. Every month, I plan to install an additional piece of equipment on the newer Tandy machines and report on the difficulty of installation and the clarity of the documentation. Most of the upgrades will be those that are "user installable." This month, the 1000 EX gets a second external 5 1/4-inch disk drive (\$249.95).

The drive gets four stars for ease of installation. In fact, "installation" is too technical a term for connecting the external drive. All you need to do is plug the cable and the ground wire into the back of the drive and into the back of the computer. The only note of caution is to make sure that the Torroid, a round filter tube at one end of the cable used to reduce electrical interference, is close to the computer.

STEPHEN MILLER, former computer columnist for UPI, is a freelance writer and computer consultant.

ORPHANS

BY PATRICK SPERA

Sometimes I'm asked, "Why bother with those old machines? Aren't they useless? Dead?" Well, the only dead computer is one that isn't used. Many users' groups seem to share my opinion. They are finding new uses for their computers and helping their communities while they're at it.

The local TI users' group here in Oklahoma City (Sooner 99er, BBS [405] 672-8270) is using its spare machines to help handicapped children with learning disabilities. Three users' groups in San Francisco (EBZUG, PUG, and SVSTUG) are gathering Sinclair ZX81s and TS-1000s, refurbishing them, and donating them to Nevada prisons.

I'm sure other groups are starting equally worthwhile projects. If you or your users' group is involved in a community project, why not drop me a line in care of FAMILY COMPUTING and let me know. Information not shared is not information!

Adam CP/M Software. Workman & Associates (1925 E. Mountain St., Pasadena, CA 91104; [818] 791-7979) has several pieces of software available in the Adam CP/M disk format. For daring souls who want to brave the perils of space, there is *StarKill* (\$19.50), a text adventure. For the do-it-yourselfers, there's *Build-An-Adventure* (\$49.50). And those of you with Eve or Orphanware printer interfaces might be interested in *Write* (\$99.95).

Timex Telecommunications. Steve Ishii (18414 Deloite Ave., Cerritos, CA 90001) and Peter Fischer (P.O. Box 2002, Tempe, AZ 85281) have released a pamphlet called *The Guide to T/S Telecommunications*. This 52-page manual is packed with almost everything that one would need to know to get into telecomputing. Send \$2 to Steve or Peter for a copy. A second, expanded edition is available for \$5.

Just a quick reminder that the second annual TS Fest will be at the Holiday Inn North in Indianapolis, Indiana, on May 2 and 3. Call (317) 291-6002 during evenings and weekends for more information. If you're in the area and miss it, you'll regret it for the rest of your life because I will be there.

PATRICK SPERA can be reached on CompuServe (ID: 76703.4350).

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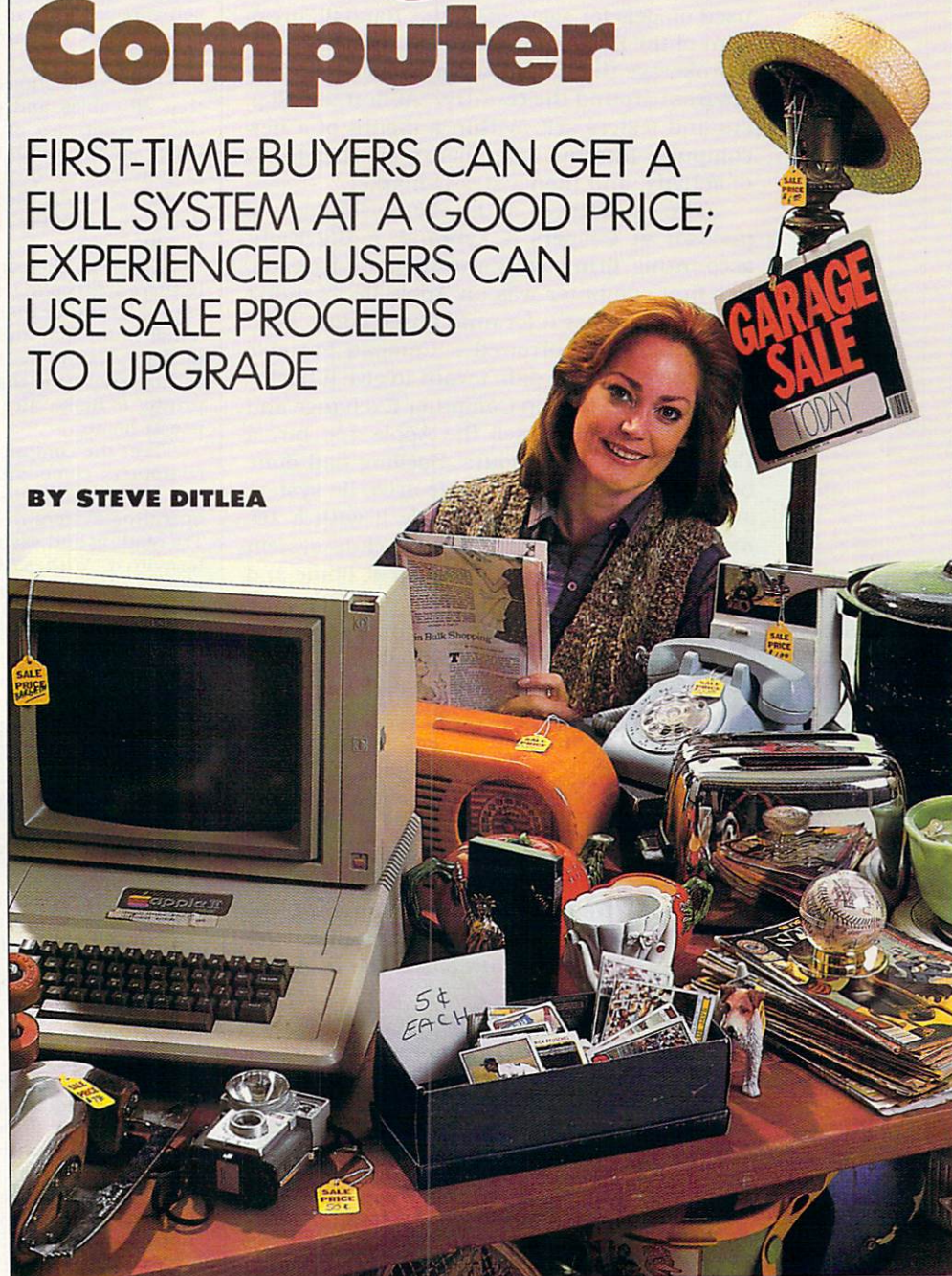
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Buying or Selling a Used Computer

FIRST-TIME BUYERS CAN GET A FULL SYSTEM AT A GOOD PRICE; EXPERIENCED USERS CAN USE SALE PROCEEDS TO UPGRADE

BY STEVE DITLEA



Whether you buy one or sell one, a used computer can mean savings of hundreds or even thousands of dollars. Once restricted primarily to swap meets and classified ads, the transfer of used personal computer equipment is being aided by a wave of brokerage services and stores dealing solely in secondhand equipment.

STEVE DITLEA is a computer journalist and editor of *Digital Deli* (Workman).

The majority of computer owners upgrade, according to various market research surveys. Many people sell their original computers within a year of purchase in the quest for new machines with greater speed and memory. Computers generally change hands while still in prime condition.

"The day the IBM AT was introduced and the day the Mac Plus was introduced, I had used models for sale," says Alex Randall, president of the Boston Computer Exchange (BCE), a brokerage that puts together buyers and sellers from around the country. "At first, developers and testers sell. Within a month of a new computer introduction, there's another flurry of activity, and then a steady market."

The experiences of Jonelle Soelling, a supervisor at Coopers & Lybrand, a Big Eight accounting firm, typify the upgrade cascade. Her first computer was an Apple IIe. "I didn't know what to use it for until I used Lotus 1-2-3 at the office. I borrowed a Compaq Portable from the office and didn't want to give it back." She called the Boston Computer Exchange and said she wanted to sell the Apple and buy a Compaq. Within 24 hours, Soelling had done both. She got \$425 for a one-drive IIe system and bought a Compaq Portable II with a 10-megabyte hard drive and tape backup system for \$1,500. Now she has a setup at home and at the office.

One family's obsolete machine can be another's ideal starter system. "I paid \$800 for a used Apple IIe system that would have cost \$1,700 new at the time," says Maureen Pepper, of North Huntingdon, Pennsylvania. Intended for her 13-year-old daughter, Kristen, her setup includes two disk drives, a monitor, and educational software.

As for the fear that previously owned equipment might be defective, Mrs. Pepper was reassured by the 30-day warranty provided by the used computer store, Computer Renaissance, where she purchased the package.

SOFTWARE BONUS

Software bonuses are commonplace when one buys a used computer. People disposing of a computer tend to be generous with the disks they've amassed, since they're often moving on to a different operating system. Programs are often included free or for a nominal charge. For instance, virtually all secondhand Macintoshes come with *MacWrite* and *MacPaint*, a \$100 value.

Edward Mulvy, a teacher in the Boston area, bought an Apple IIc package from a local author who had used the computer to write a book and was upgrading to an IBM PC after a year. "I wanted an Apple for the family because that's what we use in school," Mulvy explains. The system he bought for \$700 came with an extra disk drive, an amber monitor, a dot-matrix printer, *AppleWorks*, and early-learning

BEFORE YOU BUY

When looking at a system, see that it includes original cartons, covers, manuals, operating system software, and all necessary cables and connectors. If you have specific applications in mind, be sure the system has all the memory, components, and peripherals you need and will run the software you want to use. Examine the system for dents, nicks, or stains that might indicate heavy use or abuse.

Feel connections and moving parts. Check that all cables and clamps are seated firmly in their receptacles at the back of the machine. Open up the computer to be sure no wires or plug-in circuit boards are shaky. Try out all switches, knobs, keyboard keys, and disk drive doors to determine that they are neither too stiff nor too loose.

Listen to the computer system in operation. If there's a cooling fan, it should whisper, not squeal. Ditto for disk drives. Intermittent or unusual noise may indicate potential problems. A monitor should be silent; a hum indicates the cathode ray tube may be about to fail. Run the printer to make sure it won't be too loud when in use at home.

Test the computer and all peripherals. Many computers come with built-in memory diagnostics and self-test disks; use them. Boot up the operating system disk and format a blank disk. Try reading and saving a file on the disk you just formatted. With a two-disk system, make sure both drives can read and write files properly. Check the monitor's display; it should be crisp, bright, and properly aligned. Try a printout, and examine the characters; are they fully formed? If you're buying a modem, call a local BBS.

Ask about warranties or return privileges. Often these are negotiable, as is price if your inspection uncovers any defects or missing parts.

BEFORE YOU SELL

Prepare your system. Clean the keyboard, case, interior, and peripherals. Be sure you have all the parts that came with your computer, including manuals, DOS disk, cardboard packing inserts, and original packing boxes. If you're offering software, you should provide original disks and documentation. Make a list of everything.

Set a reasonable price for your equipment. Check current values in magazines and newspapers, price guides, and at used computer dealers and brokerages. If you're missing any parts or manuals, discount your price accordingly. Should any component not be in working order, you may want to have it fixed. Few dealers or individuals will accept a system "as-is."

Choose the best way to sell your computer. You may get the most for your system by advertising in a local newspaper or shoppers' handout, though this will add to your costs and require you to screen responses. You can list your system with a broker who charges a 10 percent commission on the sale, like the Boston Computer Exchange (Box 1177, Boston, MA 02103; [617] 542-4414) or Micro Xchange (1727 State St., Santa Barbara, CA 93101; [805] 687-1320). If you prefer not to have strangers in your home, you should choose a used computer dealer who can buy your system outright or take it on consignment.

**THERE'S
A BIG DEMAND
FOR USED
IBM PCs, AND
THE MAC 512K
IS MOVING
FAST.**

programs perfect for the Mulvy's three daughters, ages 3 to 5.

Leonard Saulnier bought an Apple II Plus from his Boston neighbor, Steve Gillespie, who was selling because his son had left home for overseas duty with the Navy. Though the Saulniers already had a Commodore 64, their son Gilles, 17, wanted a second computer for word processing at prep school.

"It was a perfect match," says Leonard Saulnier. "We got a reliable system with a monitor and printer for \$400 and even got a VisiCalc spreadsheet package."

Another advantage of buying a used computer is that the original owner often provides assistance while a purchaser is becoming familiar with a used system—something a dealer is not likely to do.

WHAT'S HOT, WHAT'S NOT

Secondhand models being bought and sold tend to be the same ones that dominate the new computer trade: IBM PCs, XT's, AT's, and compatibles; Apple II's and Macintoshes; and occasionally Amigas and Atari ST's. "It's amazing how many people find that Apple is wrong for them or IBM is wrong for them and they switch to the other company," says BCE's Randall. "A lot may start out with one application, like word processing, on an IBM, and then decide to get into desktop publishing and move to a Mac."

There is a big demand for used IBM PCs now that they're selling for around \$1,000, according to a recent weekly update report from the BCE. IBM AT sales are also active, despite the onslaught from low-cost clones. The Macintosh 512 is moving fast, and prices may drop with the new Macintosh II and SE coming on the market. The Toshiba 3100 laptop, an IBM AT compatible, is beginning to move. The Compaq 386 is not yet active, but should be the next mover. And, the BCE report notes, "There is no demand for used cheap clones. Brand name hardware still holds its value on the Boston Big Board." (You can read the weekly BCE report on MCI Mail by typing VIEW BOCOEX INDEX at the MCI command prompt.)

With Commodore 64s and Atari 130XEs selling new for less than \$200, there is little incentive for these machines to be purchased used. One exception to this rule was the deal offered last spring by Protecto, a mail-order firm. For those who turned in a Commodore 64 and a disk drive, Protecto offered \$200 credit toward the purchase of a Laser PC (\$749), an IBM-compatible computer.

Out-of-production models fetch only token amounts, unless they were serious business machines with ample software in their heyday. But if you're willing to buy one of these old warhorses, you can find great deals.

Used computers generally sell for 30 per-

cent to 50 percent of current list price, with actual figures varying according to a model's age, condition, popularity, the number of extras included, and local and seasonal demand. "Prices are higher during tax season in April, back-to-school time in September, and before Christmas," explains Randall. "You'll find bargains in January after people have gotten new systems at Christmas," he adds, "though sharp-eyed consumers can spot good buys at any time of the year."

BUYING THROUGH BROKERS AND STORES

The Boston Computer Exchange, the country's largest used-computer brokerage firm, never actually handles equipment, leav-

USED COMPUTER PRICES

The following figures come from the *Orion Computer Blue Book*, 1987 edition, a guide for dealers to set the cost of used equipment. Since prices fluctuate so often, especially with the introduction of new equipment, these prices should be considered as a general guide only. **New List** is the current manufacturer's suggested price. **Retail Used** is approximately what you'll pay when buying a used computer. **Wholesale Average** is what you can expect when selling to a dealer. Prices are for standard systems, but don't include other peripherals or software. A computer in mint condition or one with peripherals and software can command a lot more money.

Manufacturer	Model	New List	Retail Used	Wholesale Average
Apple	Ile w/mono monitor	\$995	\$297	\$126
Apple	Ile	\$945	\$245	\$98
Apple	Mac 512K	\$1,699	\$975	\$410
Apple	Mac Plus	\$2,195	\$1,150	\$445
Atari	520 ST w/mono	\$795	\$310	\$115
Atari	520 ST w/color	\$999	\$420	\$175
Atari	1040 ST w/mono	\$899	\$375	\$150
Atari	1040ST w/color	\$1,099	\$475	\$198
Commodore	C 128	\$495	\$125	\$30
Commodore	Amiga w/color	\$1,295	\$513	\$211
Compaq	Portable	\$2,199	\$710	\$291
Compaq	Deskpro 286	\$2,999	\$1,400	\$579
Epson	Equity I	\$995	\$428	\$176
Epson	Equity III w/20-MB drive	\$1,695	\$593	\$243
IBM	XT w/10-MB drive	\$1,995	\$705	\$289
Kaypro	286 w/10-MB drive	\$2,495	\$950	\$395
Kaypro	386 w/10-MB drive	\$4,995	\$2,898	\$1,200
Leading Edge	Model D w/20-MB drive	\$1,895	\$742	\$298
Tandy	1000 w/10-MB drive	\$1,999	\$594	\$275
Tandy	1200 w/10-MB drive	\$1,999	\$640	\$295
Tandy	Color Computer II	\$139	\$44	\$18

Courtesy Orion Research Corp., 1315 Main Ave., Durango, CO 81301; (303) 247-8855.

"THE DAY THE IBM AT WAS INTRODUCED I HAD USED MODELS FOR SALE," SAYS A BROKER



Brokers at the BCE get listings from sellers and match them with buyers.

ing responsibility for evaluation and delivery to sellers and buyers. The BCE keeps lists of buyers and sellers and puts them in touch with each other. Ideally, you'll find someone in your area, so you can inspect the equipment before making a purchase. After a successful transaction, the seller gives 10 percent of the proceeds to the BCE.

The BCE has over 1,000 used-equipment listings, which are updated daily. They are available by mail from its office ([617] 271-4235; \$10), via modem on the Boston-based information service CitiNet ([617] 439-5699), or through one of 50 local affiliates around the country. Sellers give a short explanation of why they are selling, such as "upgrading" or "need money."

There are a number of used computer stores around the country, many of them individual outlets. The largest chain is Computer Renaissance, with seven stores (in as many cities) and 20 expected by the end of the year. These stores allow you to exchange equipment you've bought if it doesn't suit your needs. To provide sufficient choices, each store stocks over 40 brands.

A purchaser may be at a disadvantage because he or she cannot be in contact with a system's original owner for support, but this factor is somewhat compensated for by most used computer shops' 30-day warranties. Usually, you can extend this for a small premium. A few, like the Used Computer Store in Berkeley, California, might even offer longer warranties. Its 90-day parts and labor warranty, for all systems, is included in the purchase price.


In addition, most used-computer stores will service any equipment they sell. On the other hand, prices at these stores tend to be

higher than buying directly from a computer owner, especially when system components and software are sold separately.

SUPERMARKET BULLETIN BOARDS

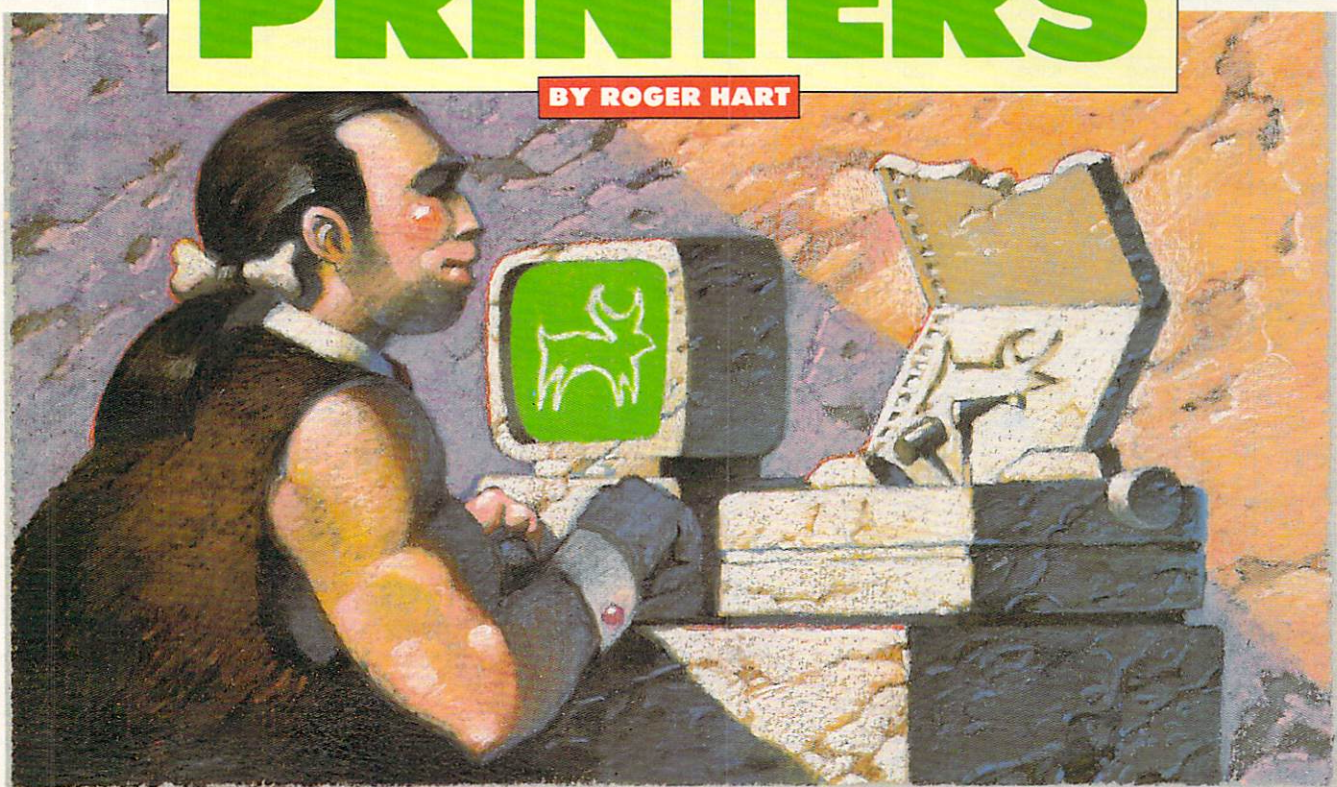
The best way to buy or sell a computer may be on a supermarket bulletin board or through a classified ad. You may even want to advertise that you're looking for a specific computer at a specific price; often, a system that's been underutilized or gathering dust in the garage will go for a song. "A reverse ad can turn up the equivalent of the proverbial used car driven only on Sundays by a little old lady," says Roger Rohrs, publisher of the *Orion Computer Blue Book*, an annual price guide for used computers. "Some people never got their computers to do what they wanted. They don't even know there's a market for their mint condition systems."

Alternatively, a seller can place an ad in a supermarket. Use one of the many print programs to make a sign that will stand out from the handwritten clutter on the board! If you make a sale, you're likely to get a better price than you'd get going through a broker or selling wholesale to a dealer.

Unless you're extremely knowledgeable about computers, don't try to buy a system unless you can try it out. If you can try out a computer and it works, odds are it will continue to do so. Compared to an automobile or a home appliance, a computer has relatively few moving parts that can break down. In fact, if an electronic part fails, it generally happens in the first months of use, during the "burn-in" stage. So a used computer in good working order is not prone to failure—one more reason for a thriving market for used equipment. 

BUYER'S GUIDE TO PRINTERS

BY ROGER HART



PRIMITIVE 'HARD COPY' IS A THING OF THE PAST

In the early 1980s, people referred to printouts as "hard copy"—as if printouts were merely inelegant copies of what appeared on a computer screen or were encrypted on a disk. Now, people use words like "publishing" and "printing" because printers can take screen information and enhance it. That's a symptom of the many changes in the printer market.

In the early '80s, it was hard to find a letter-quality printer that sold for under \$1,500. Now, you can get good ones for under \$300.

In the early '80s, dot-matrix printers had a very dotted, "computery" output. Now, dot-matrix printers give letter-quality printers a run for their money.

In the early '80s, thermal printers required a special shiny paper that had the stigma of "cheap" about it. Now, thermal technology has changed and can produce good color and good text on special and/or regular paper.

All this is encouraging news for computer owners because a computer without a good printer is like a deep-sea fish stuck in an aquarium. What's the point of word processing if you can't print out your words? Whether people want just a hard copy or a full-fledged publication with enhancements galore, they want it on paper.

THREE TYPES

Most computer owners choose one of three types of printers: daisywheel, dot-matrix, or thermal-transfer. Laser printers, which can generate all kinds of different

fonts in a very high-quality text, are catching people's eyes these days, but even the least expensive are priced close to \$2,000. (See the Home-Office department for a list of firms that will laser-print from a disk.)

Here's a brief description of the three main printer types, followed by guidelines on choosing the one right for you:

Daisywheel printers are basically computerized typewriters. They have a wheel with spokes; on each spoke is a preformed letter or character that strikes the ribbon and imparts ink to the paper.

Dot-matrix printers use one printhead to make every character. It contains a head with a vertical row of tiny pins or wires. When fired forward into the ribbon, the pins produce dots that form characters. Older dot-matrix printers have only nine pins; newer ones sport as many as 24 pins, which produce a better image because the dots are closer together.

Thermal-transfer printers also form characters out of dots, except that their pins are heated, not struck into the ribbon. These transfer printers use a ribbon coated with a special waxy ink that transfers to the paper when warmed by the pins. Transfer printers can create text and graphics, and many can print in color. The special ribbons, however, don't last nearly as long as regular ribbons and are expensive—about \$6 for a black one and \$10 for color.

BUYING STRATEGIES

To choose a printer, you must first identify your needs. Obviously, you'd like a printer to do everything equally

ROGER HART wrote "Buyer's Guide to The New Printers" in the September 1986 issue of FAMILY COMPUTING and "Selling Yourself" in this issue.

SELECTED PRINTERS UNDER \$1,000

Printer	Price	Draft Speed: cps	Hi Qual Speed: cps	No. Pins	Interfaces	Notes
DOT-MATRIX \$300 AND UNDER						
Blue Chip 120/NLQ	\$299	120	25	9	COM	2K buffer, italics
Brother M-1109	\$299	100	25	9	P & S	2K buffer, italics
Commodore MPS 1200	\$300	120	24	9	COM	4K buffer, italics
Epson LX-86	\$299	120	16	9	P	1K buffer, 8K/32K optional
Seikosha SP-1000	\$299	100	20	9	COM, P, S	1-2.5K buffer, italics
Tandy DMP 105	\$200	80	—	8	P & S	
\$301-\$600						
Apple ImageWriter II	\$595	250	45	9	AP, MAC	32K buffer, color
Brother M-1409	\$479	180	45	9	P & S	3K buffer, italics
Centronics GLP II	\$320	100	25	9	P & S	2.2K buffer, italics
Citizen MSP-10	\$449	160	40	9	P, (S-854)	1K buffer, reverse image printer, italics
C. Itoh ProWriter Jr. Plus	\$369	160	30	9	P (S-850)	Includes printer stand
C. Itoh ProWriter 210XP	\$549	216	45	9	P	
Mannesmann Tally MT87	\$599	200	50	9	AP, IBM, P, or S	3K buffer, italics
Okidata Microline 182	\$339	120	30	9	P (S-860, AP-S190)	Italics
Okidata Microline 192 Plus	\$499	200	40	9	IBM, P, (S-890)	8K buffer, italics
Panasonic KX-P109li	\$429	160	32	9	P (S-893)	1K buffer, italics, 3 million-character ribbon length
Seikosha SP-1000	\$319	120	25	9	P or S	2.3K (P) or 10.3K (S) buffer, italics
Star Micronics ND-10	\$499	180	45	9	P (S-8129)	12.6K buffer, italics
Tandy DMP 130	\$350	100	20	9	P & S	No buffer, italics
\$601-\$1,000						
Brother M-1709	\$699	240	15	9	P & S	24K buffer, italics
Canon A-60	\$649	200	34	18	P or S	8.5K buffer
C. Itoh ProWriter C-315	\$899	300	50	9	P or S	8K buffer, color, italics
Epson FX-286	\$799	200	40	9	P (S, IEEE-488 optional)	8K buffer
Epson EX-800	\$649	300	60	9	P & S	8K buffer, color (\$100)
Epson LQ-800	\$699	180	60	24	P & S	7K buffer
IBM 4202 Proprinter XL	\$799	200	40	9	P, (S-899)	4K buffer, 8K optional (\$35)
Seikosha MP-1300 AI	\$699	300	50	9	P & S	10K buffer, italics, color cartridge optional (\$155)
NEC P660	\$699	216	65	24	P	8K buffer, italics
Okidata Microline 292	\$749	200	100	18	IBM, P, S	8K buffer, color, italics
Tandy DMP 430	\$699	180	100	18	P & S	No buffer, italics
Toshiba P321	\$699	216	72	24	P or S	2K buffer
THERMAL-TRANSFER \$300 AND UNDER						
Ergo Hush 80	\$100-\$230	80	—	7	AT, COM, P, S	1-line buffer, does Okidata graphics
Okimate 20	\$268	80	40	24	AP, AT, ST, COM, IBM, P, S	8K buffer, color, italics
DAISYWHEEL \$300 AND UNDER						
Aprotek Daisy 1120	\$280		20		P	2.5K buffer, Diablo 630 compatible
Silver Reed EXP 420	\$300		12		P, COM	2K buffer, Diablo 630 compatible
\$301-\$600						
C. Itoh Starwriter X10-20	\$549		22		P or S	2K buffer
Brother HR-10	\$349		12		P or S	2K buffer
Brother HR-20	\$499		22		P & S	8K buffer, two colors
Juki 6000	\$305		10		P or S	—
Panasonic KX-P3131	\$419		17		P (S-893)	6K buffer
Star Micronics Powertype	\$499		18		P & S	1-line buffer, front control panels
Tandy DWP 230	\$400		20		P & S	—
\$601-\$1,000						
IBM 5223 Wheelprinter E	\$699		16		IBM, P	1.5K buffer
Juki 6200	\$810-\$878		30		P (\$810) or S (\$878)	3K buffer
Silver Reed EXP 600	\$699		25		P, S, IEEE-488	3K buffer, Diablo 630 compatible, wide carriage (accepts paper up to 17"; actually prints 13.2")
Silver Reed EXP 800	\$949		40		P, S, IEEE-488	3K buffer, Diablo 630 compatible, wide carriage (accepts paper up to 17"; actually prints 13.2")

AP-Apple serial; AT-Atari XE/XL; COM-Commodore 64/128; IBM-IBM character set; P-Parallel; S-Serial; CPS-characters per second.

PRINTER PROS AND CONS

TYPE	PROS	CONS
Daisywheel	Typewriter-quality print	Slow; relatively expensive; primitive graphics only
Dot-matrix	Can print text and graphics; some printers offer color option; very fast	Type quality on some models not adequate for business correspondence
Thermal-Transfer	Can print text and graphics; relatively inexpensive; quiet; color	Requires new ribbons often; slower than dot-matrix

well, but you have to consider tradeoffs. Choose the features you *must* have, and work from there.

Are *graphics* important to you? If you use paint or drawing programs, chart-generating programs, or software that uses different type styles, graphics are part of your life. Similarly, if you have a graphics-oriented computer, such as a Macintosh, Amiga, or ST, you want a printer that can transfer images from screen to paper. To do so, you need a dot-matrix or thermal-transfer printer; daisywheel printers are capable of only primitive graphics.

Is *speed* important? Faster is always better than slower, so the real answer depends on the size and frequency of your printing jobs. The more you have to do, the more important speed is. And dot-matrix printers are the speed kings.

Is *type quality* of overriding importance? You want your printouts to look as good as possible, but is it mandatory that they are of business-correspondence quality? If so, you probably need a letter-quality daisy-wheel printer, though 24-pin dot-matrix printers produce type good enough to satisfy many users.

Do you want good text but also the ability to print graphics? Then a 24-pin dot-matrix printer is certainly the choice. Thermal-transfer printers fit the bill, too, at a lower cost.

Do you need wider paper to print a spreadsheet? If so, then you should get a wide-carriage printer, which can hold up to 17-inch wide paper.

Is a *buffer* important? Ordinarily, your computer is tied up while a document is being printed out. A buffer in your printer will store a document (or part of it) while it's being printed so that your computer can work on something else. Many printers have a 2K buffer, which holds about a page of double-spaced text.

Do you want to print single sheets of paper? Then you should get a printer with a *friction-feed* mechanism.

MATCH WITH YOUR COMPUTER AND YOUR SOFTWARE

Once you've narrowed your choices, you want to make sure you find a printer that will work with your computer and with your software.

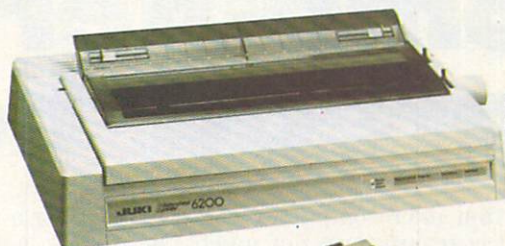
Most printers come with a Centronics-style parallel interface; since many computers also have a Centronics parallel connection, this is often the easiest way to go. Some printers can be bought with an RS-232C serial

PRINTER COMPANIES

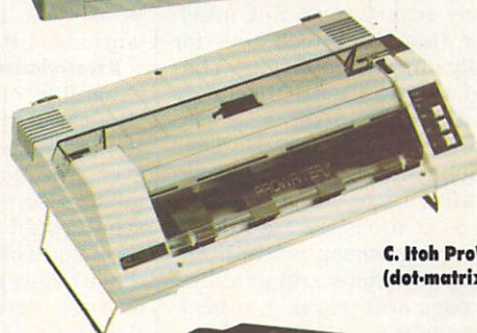
Apple Computer, (408) 996-1010; Aprtek, (805) 987-2454; Blue Chip, (602) 961-1485; Brother, (201) 981-0300; Citizen, (213) 453-0614; Commodore, (215) 431-9100; Epson, (213) 539-9140; Ergo Systems, (408) 436-7722; IBM, (800) 447-4700; C. Itoh, (617) 769-8770; Juki, (213) 320-4860; Mannesmann Tally, (206) 251-5524; NEC, (617) 264-8000; Okidata, (609) 235-2600; Panasonic, (201) 348-7000; Seikosha, (201) 529-4653; Silver Reed, (213) 516-7008; Star Micronics, (212) 986-6770; Tandy Corp., (817) 390-3011; Toshiba, (714) 730-5000.



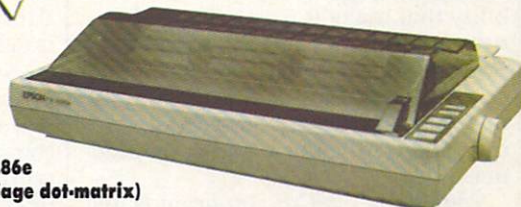
Okimate 20
(thermal-transfer)



Juki 6200
(daisywheel)



C. Itoh ProWriter Jr.
(dot-matrix with stand)



Epson FX 286e
(wide-carriage dot-matrix)

interface, but many people like to keep the serial interface on their computer free to connect a modem.

In either case, the only trick is to get a cable that fits both your printer and your computer. And that's a matter of making sure the dealer understands what you need and/or reading labels carefully.

If your computer has a non-standard connection, as do the Apple IIc, IIcs, Atari XE/XL, CoCo, Commodore 64/128, and Macintosh, your best bet is to buy a printer with a cable designed for that computer.

On the software front, many people make the mistake of thinking that a printer with special features will squeeze a little extra out of mediocre software. Not true! The software must "support" your printer, which means it must have a built-in printer driver (a separate file containing commands that utilize the features of a particular printer). Conversely, sophisticated software cannot make a mediocre printer jump through hoops. For instance, software that generates different type styles won't produce different type styles on a daisywheel printer because the printer has only one character set.

If you have a software collection, check to see which printers the programs support. If you are buying new software, make sure it supports the printer you own.

Since printers are so popular, there's a bewildering array of models on the market. This complicates your decision, but the competition among manufacturers only means that the prices keep going down. Check the chart, choose models that appeal to you, and then head out to the stores and examine them in action. Most printers have a self-test mode that lets them strut their stuff. **FC**

Choosing and Using Computer Spreadsheets

LEARN HOW THESE
NUMBER-CRUNCHING
TOOLS CAN HELP YOU
RUN YOUR BUSINESS
AND CONTROL
YOUR FINANCES

BY STEVE MORGENSTERN

The first microcomputers were widely regarded as not much more than high-tech toys for electronically minded hobbyists. That all changed in 1979 with the introduction of the first electronic spreadsheet, *VisiCalc*. Created by Harvard Business School student Dan Bricklin and a student at M.I.T., Robert Frankston, *VisiCalc* is the traditional accountant's worksheet, with numbers organized in rows and columns across the page and power and flexibility that make it irresistible to business executives. The program put the Apple II (at the time the only computer that could run *VisiCalc*) on the map and started the growth of commercial, off-the-shelf software products.

Today, the *VisiCalc* program is just a historical footnote, replaced by other, more powerful spreadsheets. Even the most advanced spreadsheet software, though, shares the underlying structure of the original and offers the same basic benefits:

Organization: The computerized spreadsheet allows neat, organized entry of numerical information. Mistakes or changes in the figures can be made on-screen as often as necessary without messy erasing and crossing out.

Size: A pencil-and-paper spreadsheet with more than 20 or 30 rows or columns soon becomes physically too large to handle practically. Computer spreadsheets, on the other hand, can extend for hundreds of entries vertically or horizontally, and a few keystrokes will take the user from section to section instantly.

Calculation: In addition to entering figures and labels in an electronic spreadsheet, we can enter formulas. These formulas perform mathematical calculations based on the numbers we enter. Instead of your having

to reach for a calculator, the figuring is all done within the computerized worksheet itself.

Recalculation: The most significant capability of spreadsheet software is the way it refigures the results of all the formulas on the worksheet whenever you change the numbers. This allows users to play "what-if" games. What would happen to company profits if you sold 20 percent more floppy disks? How much would your batting average increase if you went three for three in tomorrow's game? How much would you have in the savings account at the end of the year if you put away \$10 more each week? Once you have set up a spreadsheet with the right formulas, you can experiment with the variables to your heart's content and see the results displayed instantly.

WHAT ARE THEY GOOD FOR?

When we think of electronic spreadsheets, the first applications that come to mind are business uses. Even if you are not responsible for company finances—your own or someone else's—there are plenty of ways a spreadsheet can help bring order to the numbers in your life. We mentioned two of these possibilities in the recalculation example above. Here are a few more.

- Setting up a family budget is a natural task for a spreadsheet; you can tailor any worksheet to your methods of dealing with personal finances.

- If you play the market, you can easily track purchases and sales of stocks, bonds, and mutual funds.

- Serious collectors can maintain an inventory of the items in their collections, including purchase price and current value for each item.

- Many homeowners want to track utility expenditures or keep a record of possessions for insurance purposes.

- Scientists use spreadsheets to record results of experiments or perform complex mathematical calculations.

- Club secretaries will find spreadsheets handy when organizing records of dues payments and meeting attendance.

In short, any undertaking that involves juggling numbers will be faster, easier, and more flexible with an electronic spreadsheet. While database programs can also handle some of the same tasks, they're often not as flexible. And the more calculations you need to make, the more time you will save by transferring the figures from your dog-eared notebook to a computerized spreadsheet.

THE BASICS OF EVERY SPREADSHEET

Virtually every spreadsheet on the market is organized in the same way, as shown in the accompanying photograph. Across the top is a series of letters, and down the side is a series of numbers. The letters identify the columns running up and down the screen; the numbers identify the rows running across. Different spreadsheets use slightly different systems to label rows and columns. Virtually every one uses numbers for rows. For the columns, most (as shown here) use letters, a few use double letters (AA, AB, AC, etc.), and others use numbers for both rows and columns. In the long run, it doesn't matter.

The rows and columns form a grid, and each box within this grid is called a cell. Cells are identified by column and row. The very first cell in this example, in the top-left corner, is called A1. One cell down from the top-left is A2. One cell to the right of top-left is B1.

We locate our place in the spreadsheet with a cursor the size of a cell in our grid. The coordinates of the current location are usually displayed

STEVE MORGENSTERN is a contributing editor for FAMILY COMPUTING.

ELEMENTS OF A SPREADSHEET

The fundamental simplicity of any spreadsheet—a structure of rows and columns—belies the potentially complex work you can accomplish with it. This screen shot of a spreadsheet (MacCalc from Bravo Technologies) illustrates many of the characteristics common to the category. Beneath the name of this particular worksheet ("Family Budget 1987") are the alphabetical labels for each column. The first column on the left is "A" and the one on the far right is labeled "E." To see more columns, you can press the cursor keys (or, since this is the Macintosh, use a mouse) to scroll horizontally. The rows are numerically labeled on the left, beginning with "1," and, in this screen, going down to row 10. Again, you can scroll to see more.

The box where each column and row intersect is

	A	B	C	D	E
1	Budget				
2		January	February	March	April
3	Salary Income	\$2400.00	\$2400.00	\$2400.00	\$2400.00
4	Extra Income	\$250.00	\$195.00	\$150.00	-\$50.00
5	Savings	\$538.00	\$483.00	\$438.00	\$238.00
6	Utilities				
7	Telephone	\$46.98			
8	Gas & Electric	\$57.57			
9	Water	\$12.95			
10	Total	\$117.50			

called a cell. Our cursor is in cell B5—the January figure for savings—which is highlighted by a bold line. You can also tell which cell the cursor is in by looking in the upper left-hand corner, where the current cursor

location is always indicated. While cell B5 itself contains the figure "\$538.00," the prompt line toward the top of the screen shows the formula that produces that figure. The formula reads "B3 * 0.12 +

B4"; here's how that works: First, the formula takes the figure in cell B3—\$2400.00, or this family's monthly income from salary—and multiplies it by 0.12, or 12 percent, the amount of income this family is

looking to save. (Note that the asterisk [*] is the computer's symbol for multiplication.) Twelve percent of \$2400.00 equals \$288.00. But we're not finished, because then the formula adds the contents of cell B4—in this case, any extra income for January, or \$250.00. The sum of \$250.00 and \$288.00 is \$538.00, the contents of cell B5.

The unseen formulas in cells C5 for February, D5 for March, and E5 for April do the same thing—multiply monthly income from salary by 12 percent and add in any extra income for that month. Other cells in this screen shot—such as the ones in column B (January), rows 7 through 10—keep track of some typical expenditures. For example, the figure at the bottom of column B, \$117.50, is a subtotal of utility costs for that month.

on what's called the prompt line. In the photograph, we can see the cursor is at location B5, as confirmed by the indicator at the top-left on the screen.

You can enter three types of information into any single cell within the grid: text, a number, or a formula.

Text and numbers are simply typed in where you want them. If the information to be entered is too wide to fit in a column, you can use one of the format commands to make the spreadsheet columns wider. Most spreadsheet software lets you choose between making all the columns wider or narrower simultaneously (called a global change) or adjusting the width of different columns individually.

When you type numbers in place on the spreadsheet, you don't include commas, dollar signs, percent signs, or other notations (except decimal points for numbers with fractional parts). Instead, if you want the dollars-and-cents figures in your worksheet to look right, you specify how the number will look by using another format command.

In designing your spreadsheet, you can work with several different kinds of format commands. Most spreadsheets allow you to make the information in a cell line up with the right edge of the cell (normal for numbers),

with the left edge, or the center. You can specify the number of decimal places you want before a number is rounded off. You may also have options such as choosing whether or not a comma should be displayed in a four-digit or larger number, whether negative numbers should be displayed with a minus sign or in parentheses, and whether scientific notation should be used for especially large numbers.

FORMULAS AND FUNCTIONS

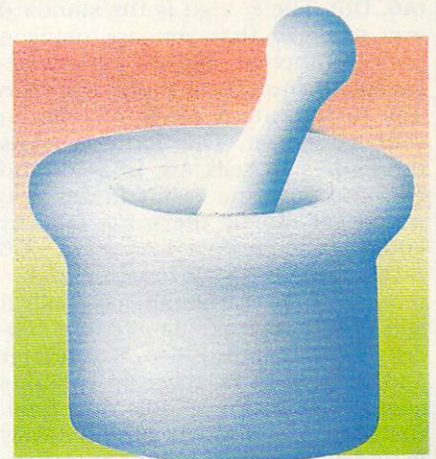
The strength that makes an electronic spreadsheet worlds apart from its paper counterpart is the ability to enter a formula in a spreadsheet. Any formula takes the numbers entered in the cell(s) you specify, performs the mathematical operation(s) you request, and then displays the result in the cell that contains the formula.

In our example of a budget spreadsheet, there is a simple formula in cell B5 for calculating how much money might be in savings at any point: $B3 * 0.12 + B4$. This formula takes the amount entered in cell B3 (normal income), multiplies it by .12 (or 12 percent, which is the percentage of income this family wants to save), then adds the result to the amount entered in cell B4 (which represents any income beyond normal). Notice that the result of the calculation

appears in B5, while the formula is visible in the prompt line (since our cursor is in the formula cell).

If we change the figures in either B3 or B4—the cells referred to in our formula—the formula can automatically recalculate based on the new information and display the updated result in B5.

You can use any standard arithmetic operation in a formula (addition, subtraction, multiplication, and division). In addition to these basics, each spreadsheet comes with its own



set of additional operations, called *functions*, built in.

Some functions are simply shortcuts that streamline spreadsheet

SUGGESTED SPREADSHEET SOFTWARE

Each of the features and functions listed along with the spreadsheets below is described in the main text of this article. Also included is the maximum size (or dimension), measured in columns and rows. But, depending on your computer's memory and what you've put into each cell (for instance, text uses less memory than formulas), the maximum size can't always be reached.

1-2-3 (Release 2.01). Lotus Development Corp. (617) 577-8500. 256K IBM PC. \$495. Max. size: 256 cols. x 8,192 rows.

The industry standard, and rightfully so. Can be customized to meet needs of most demanding user, yet beginners can get their work done painlessly. Excellent documentation. Features protected and hidden cells and 89 functions, including logical, financial, string, and date/time. Also macros, graphing, password protection, memory indicator, named ranges, windows, fixed titles, table lookup, sorting, data base, and on-line help. Copy-protected, but allows single hard-disk installation.

Analyze! Micro-Systems Software. (305) 391-5077. 512K Amiga, Atari ST. \$150. Max. size: 256 cols. x 8,192 rows.

Flexible design lets user de-

cide whether to enter commands via keyboard or mouse based on one's preference. Features protected cells, 44 built-in functions (including logical, financial, and date), macros, graphing, memory remaining indication, named ranges, windows for graphics, fixed titles, table lookup, sorting, and on-line help. Not copy-protected.

E-Z Calc. Royal Software. (503) 683-5361. Atari ST. \$70. Max. size: 300 cols. x 999 rows.

Though the manual is on the slim side, this GEM-based program offers all the spreadsheet power most of us will need, plus a useful pop-up calculator and ability to attach text notes to individual cells. Features 34 built-in functions (including logical and financial), windows, fixed titles, table lookup, sorting, and on-line help. Not copy-protected.

MacCalc. Bravo Technologies, Inc., (415) 841-8552. 512K Macintosh. \$139. Max. size: 125 cols. x 999 rows.

An elegant, easy-to-use program. Although it lacks graphing and macro capabilities, MacCalc has Undo commands not found elsewhere, total point-and-click simplicity for building formulas, excellent scrolling control, a terrific utility to attach text notes to cells, nice use of Mac fonts, and the ability to export formatted

charts with rules into word-processing or desktop-publishing applications. Features protected cells, 50 functions (including logical and financial), memory remaining indication, named ranges, windows, table lookup, sorting, and on-line help. Not copy-protected.

MaxiPlan. Oxxi, (408) 373-4018. Amiga. \$150. Max. size: 512 cols. x 65,536 rows.

Mousing around streamlines formula entry. Option to have program speak entries aloud for audible confirmation of data entry can be useful, as can the ability to attach text notes to individual cells. Features 63 built-in functions (including logical, financial, and date/time), graphing, named ranges, windows, table lookup, sorting, data base, and on-line help. Macro capability available as separate \$50 program. Not copy-protected.

Microsoft Excel. Microsoft, (206) 882-8080. 512K Macintosh. \$395. Max. size: 256 cols. x 16,384 rows.

Top-of-the-line choice for both convenience and capability. Loaded with distinctive features, including user-defined number formats and functions, exceptional graphics, easy linkage between spreadsheets, and complete macros. Sophisticated features are complex to learn, but

you can use *Excel* at any level of expertise. Features include protected and hidden cells, 85 built-in functions (including logical, financial, string, date/time), macros, graphing, password protection, memory remaining indication, named ranges, windows, table lookup, sorting, linked worksheets, data base, and on-line help. Not copy-protected.

Microsoft Multiplan. Apple, 256K IBM PC, Macintosh from Microsoft, (206) 882-8080. \$95-\$195. C 64/128 from Epyx, (415) 366-0606. \$40. Max. size (IBM): 256 cols. x 4,095 rows. Max. size (Apple, C 64, Mac): 63 cols. x 255 rows.

Features protected cells, 40 built-in functions (including logical, financial, string), macros (IBM only), memory remaining indicator, named ranges, windows, fixed titles, table lookup, sorting, linked worksheets, and on-line help. One of the most powerful for C 64/128; includes 12 prepared worksheet templates. Apple, IBM, and Mac versions are not copy-protected.

Planner's Choice. Personal Choice Software/Activision, (415) 940-6044. Apple, C 64/128, IBM PC/PCjr. \$40-50. Max. size: 80 cols. x 255 rows.

Smooth-working basic spreadsheet will suit average users' needs. Features 14 built-in functions (including financial), memory remaining

construction and operation. For example, the SUM function will add the numbers in a specified range of cells. In one spreadsheet example, cell D8 contains the formula @SUM(A6..D6). The @ sign is the standard way to show that you are using a built-in function, and the periods between A6 and D6 are one common way to indicate a range of cells on your worksheet. This formula totals the figures in cells A6, B6, C6, and D6, and puts the result in D8. You would get exactly the same total by entering the formula +A6 +B6 +C6 +D6. Using the SUM function makes it easier to enter, though, especially if you want to add the figures in a 100-cell row or column! Also, if you later add one or more rows or columns somewhere in the middle of a total, the SUM function will automatically include them; otherwise you'd have to add the new cell reference manually, and that can cause problems.

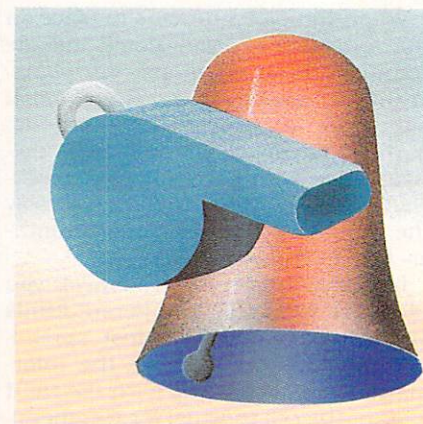
Built-in financial calculation functions are also popular. For instance,

a future-value function calculates the result of an investment at a stated interest rate over a specified period of time. Since the numbers plugged into a function can be pulled from other cells in the spreadsheet, this kind of financial function makes short work of "what-if" decisions for investments. Let's say you've invested \$1,000 in a certificate of deposit (CD) at 5 percent yearly interest. The future-value function can show you how much the CD will be worth in four years, including compounded interest. What if you invest \$2,500 instead? The function will show you that value, too.

Generally speaking, the more built-in functions available in a given spreadsheet, the better. You may never need a function that calculates the length of a label on your spreadsheet, the absolute value of a number, or the depreciated value for a specific period, but I have yet to see a spreadsheet that sacrificed basic functions to add on complex ones.

BELLS AND WHISTLES

You can do a lot with a fairly ordinary spreadsheet package, and it won't cost much either, as our list of recommended software demonstrates. However, spreadsheets are a hot software category, and publishers have come up with a host of extra features that keep users wanting to upgrade. Here's a rundown of some



indicator, and windows. Copy-protected.

Powerledger. Abacus Software, (616) 241-5510. Atari ST. \$80. Max. size: 65,000 cols. x 65,000 rows.

Several rough edges here (mediocre documentation, no on-line help, and slim selection of built-in functions), but nearly instantaneous graphing in multiple windows is a strong selling point. Features 24 functions, memory remaining indication, named ranges, and sorting. Not copy-protected.

Practical II. Practicorp, (617) 965-9870. Apple, C 64/128. \$50.

Max size: 250 cols. x 125 rows.

Includes interesting "Direction" feature that lets you create spreadsheet with prompts that ask users for information. Documentation is only so-so. Features 22 built-in functions (including logical and financial), some graphing, memory indicator, fixed titles, table lookup, sorting, and on-line help. Not copy-protected.

SuperCalc3a. Computer Associates, (408) 942-1727. 128K enhanced Apple IIe/IIc. \$195.

Max. size: 63 cols. x 254 rows.

Excellent full-featured program features extremely flexible graphing capabilities, including double hi-res. Features protected and hidden cells, 48 built-in functions (in-

cluding logical, financial, and date), disk-based macros, memory-remaining indicator, windows, fixed titles, table lookup, sorting, data base, sideways print utility, on-line help, and exceptional documentation. Not copy-protected.

SuperCalc4. Computer Associates, (408) 942-1727. 256K IBM PC. \$495.

Max. size: 255 cols. x 9,999 rows.

The leading rival to 1-2-3, *SuperCalc 4* offers easier macro entry and printing, better graphics, and includes sideways printing utility—but lacks 1-2-3's text and time handling functions. Features protected and hidden cells, 92 built-in functions (including logical, financial, and date), macros, graphing, memory remaining indication, named ranges, windows, fixed titles, table lookup, sorting, data base, and on-line help. Not copy-protected.

SwiftCalc. Timeworks, (312) 948-9200. Atari ST, C 64/128, IBM PC. \$40-\$80.

Max. size (Atari): 256 cols. x 8,192 rows

Max. size (C 64): 104 cols. x 250 rows

Max. size (C 128, IBM): 250 cols. x 250 rows.

Uses pull-down menus; boasts extensive printer and interface support. Features protected cells, 19 built-in functions (including logical

and financial), graphing, memory remaining indication, fixed titles, sorting, and sideways print utility. Not copy-protected.

SynCalc. Synapse/Broderbund, (415) 479-1170. Atari, C 64/128 (packaged together). \$50.

Max size: 128 cols. x 255 rows.

Easy-to-use menu-driven program. Features protected cells, 27 built-in functions (including logical and financial), named ranges (called "labeled rows and/or columns"), memory remaining indication, windows, fixed titles, table lookup, and sorting. Copy-protected.

The Twin. Mosaic Software, (617) 491-2434. \$99. 320K IBM PC.

Max. size: 255 cols. x 8,192 rows.

Capable 1-2-3 (Revision 1A) compatibility at one-quarter the price. Features protected cells, 56 built-in functions (including logical, financial, and date), macros, graphing, memory remaining indication, named ranges, windows, fixed titles, table lookup, sorting, data base, and on-line help. Not copy-protected.

VP-Planner. Paperback Software, (415) 644-2116. 256K IBM PC. \$100.

Max. size: 256 cols. x 9,999 rows.

This 1-2-3 (Revision 1A) clone adds two potentially significant features: reading and writing *dBase II* or *III* files and

a complex multidimensional data-base feature that (to simplify the concept a bit) links up to five spreadsheets automatically. Beginners beware: The multidimensional feature is extremely complex, and while the program can be used very effectively as a straight Lotus clone, the manual assumes you already know how to use 1-2-3. Features protected cells, hidden cells, 59 built-in functions (including logical, financial, and date), macros, graphing, password protection, memory remaining indication, named ranges, windows, fixed titles, table lookup, sorting, and on-line help. Copy-protected (unprotected disk available for \$10 additional).

Words & Figures. Lifetree Software, (408) 373-4718. 256K IBM PC. \$195.

Max. size: 256 cols. x 9,999 rows.

Unique combination of fully featured Lotus 1-2-3 (Revision 1A) compatible spreadsheet and reasonably full-featured word processor, which share figures interactively. Audit capability helps identify spreadsheet errors. Features protected and hidden cells, 59 functions (including logical, financial, and date), macros, graphing, memory remaining indicator, named ranges, windows, fixed titles, data base, and on-line help. Not copy-protected.

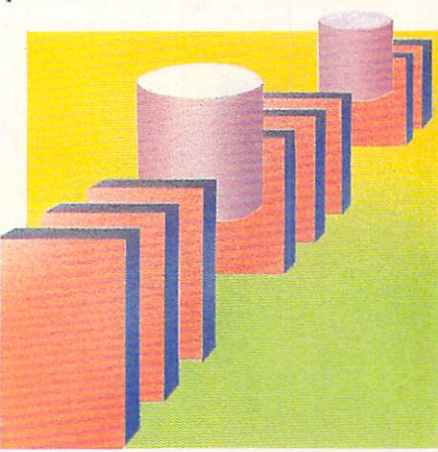
special features you'll find.

Protected and/or hidden cells. It is very handy to be able to protect a cell or group of cells from being changed. You may have entered in a cell a formula or a set of numbers that are constants and not want them to be accidentally altered. Invoking the protection feature will preserve those entries. A protected cell can easily be unprotected and changed, but the procedure for doing so requires a separate command and is very unlikely to occur by accident.

Hiding a cell's contents from view can also be useful, particularly when you reach the printout stage. You might want to print out a copy of your spreadsheet, but leave out a column of numbers because they are confidential. Perhaps you simply want to make the printout easier to read. Hiding a cell or group of cells does not remove the information from the spreadsheet, and the figures are still used in calculating formulas; the hidden cells either disappear (un-

til called back) or simply appear as blanks on the screen or in print.

Logical functions. Extremely powerful features found in high-level spreadsheets are logical functions. These functions actually evaluate whether a condition is true or false, and they act differently, depending on the result. For example, Lotus 1-2-3, *SuperCalc*, and others include the IF



function. Let's demonstrate a simple case:

You have created a spreadsheet containing the averages of every bowler in your league. You want to invite all those with averages over 175 to compete in a championship tournament. Assuming that the first bowler's average is in cell D4, you could enter a formula in E4 that reads as follows:

@IF (D4 > 175, "Invite", "Don't Invite").

When the spreadsheet calculates the value of cell E4, it first checks to see whether D4 (the cell that contains the average) is greater than 175. If it is, it enters the first option from your formula (the word "Invite") in cell E4. If it is not, it prints the second option, "Don't Invite." You can copy this formula (or any cell's contents, for that matter) and paste it in the entire E column. Now you can instantly identify the championship contenders in your league.

Logical functions have many poten-

tial uses in a sophisticated spreadsheet. For example, if you were using a spreadsheet to prepare invoices for your mail-order business, a logical function could be handy in calculating sales tax. Orders outside your home state would not be subject to sales tax, while local orders would. By entering a logical function in your "Sales Tax" column that checks an earlier cell containing the state abbreviation of the purchaser's address, your spreadsheet could automatically figure the tax when appropriate, or leave it blank for out-of-staters.

Telling time. Date-and-time functions are another advanced feature useful for many calculations. For instance, if you want to figure out a monthly sales average, you will need to know how many days elapsed between two dates entered in separate spreadsheet cells. A days-between function will calculate this for you automatically.



Other advanced functions found in high-level spreadsheet software can include financial functions to determine net present value, internal rate of return, interest rate or compounding periods required to achieve specified results, and depreciation calculations.

FEATURES TO LOOK FOR

Macros. Macros are a very useful option if you will be using your spreadsheet heavily or if other people will be entering information into a spreadsheet that you create, since they can help you automate data entry and prevent errors. A macro contains a series of keystrokes and plays them back for you at the touch of a key or two. For example, say you frequently add a set of labels—such as the months of the year—to the second row of your spreadsheet. You could create a macro that generates all 12 labels, and January, February, March, etc. would automatically be entered in the correct cells each time



you called the macro.

In some advanced spreadsheet programs, such as 1-2-3, macros can include logical functions. Such macros produce different results, depending on the nature of the data in your spreadsheet. For example, a macro for a business budget might allow 5 percent of income for advertising if gross income from sales is above a set amount, but only 2 percent if gross income falls below that amount. Sometimes macros can be interactive—that is, they execute to a certain point, wait for the person at the keyboard to enter data, and then continue on with the commands stored in the macro. In this way you can create an automatic data-entry system within your spreadsheet, leading other users by the hand.

Creating complex macros is really a form of programming. There are scores of books and magazine articles, as well as on-line services, that offer collections of ready-to-run macros for the most popular business spreadsheets. In fact, the availability of prepared macro definitions is a potent reason for so-called "power users" to stick with a popular package (or a work-alike clone).

Graphing. This popular "extra" prepares graphs (such as pie charts or bar graphs) based on information en-



tered in your worksheet. The range of available graphs varies from program to program and so does the flexibility in adding labels to a graph.

Also important here is how many different printers are supported. If your printer generally works with your computer, you'll be able to print out a worksheet created with any spreadsheet software. Every printer has its own distinctive system for printing graphics and requires special software support for each brand of printer. If your spreadsheet does not include the capability to produce output for your printer, you'll just have to settle for looking at the graph on-screen. Or in the reverse case (such as if you have a monochrome display card on an IBM PC or compatible), you might be able to print your graphs, yet not see them on-screen.

Password protection. A handy feature if you will be working with confidential figures. You simply decide on a password, and nobody will be able to load your spreadsheet without it. Of course, if you forget the password yourself, you can kiss your work good-bye. Paranoia has its price.



Remaining memory indicator. A simple feature, yet one missing from several software packages reviewed. A running indication of the amount of computer memory left is far preferable to an "out of memory" error message after you've already gone too far.

Named ranges. Most of us work better with words than with cryptic cell addresses. The ability to give names to individual cells or ranges of cells is therefore very convenient and helps minimize errors.

Say you have all of your sales figures in column D, rows 3 through 15. You could tell the program to call these cells SALES, and then use SALES in any formula you wrote that referred to this range, such as @SUM(SALES).

Windows and fixed titles. It doesn't take long for your spreadsheet to

grow larger than a single screen across or down. Windows and fixed titles are two ways to cope with this problem.

Programs that provide window capability allow you to split your screen into two or more sections, each displaying a different part of your worksheet. This lets you see the area where you are currently entering data and watch the effect of these entries in cells many rows and columns away that are displayed simultaneously in the other window.

A less desirable but still worthwhile ability is setting fixed titles. You tell the program to keep a certain number of rows and/or columns on screen at all times. Then, when you scroll your spreadsheet, the titles—such as month, names, or budget items—stay in place.

Table lookup. This powerful capability lets you set up a table of information in one section of your spreadsheet and pull out appropriate values from it elsewhere. For example, you might build a table of shipping charges (1 lb., \$1, 2 lb., \$1.50, etc.) for an invoicing spreadsheet. You could then automatically insert the correct shipping charge in the invoice with the lookup function. In this case, anything less than 2 lb. would return a value of \$1.

Sorting. If your data is arranged in rows with column categories, a sorting feature lets you rearrange the information into numerical or alphabetical order. For instance, you might have employee Last Names running down the first column and Salary, Absenteeism, Phone Extension, and other categories in subsequent columns across the page. A sort function lets you alphabetize the first column of last names and still keep each employee's data aligned with his or her name.

Linked worksheets. Potentially valuable but tricky to use, the ability to link spreadsheets lets you pull information from another worksheet directly into your current worksheet. Let's say you are keeping track of baseball team performance using linked worksheets. You might set up separate spreadsheets for pitching, fielding, and hitting data. A fourth summary worksheet could pull selected information from these individual worksheets to compile overall team statistics.

Attached text notes. You know those sticky yellow papers that people use to attach notes to documents? The software equivalent is found in some spreadsheet programs: the ability to attach text notations to individual

cells in the worksheet and call them up on-screen when needed. This is especially handy when you want to remember the source of a particular figure or the idea behind a complicated formula or to keep some supporting information handy.

Data-base capabilities. Some high-level spreadsheet software, such as *1-2-3* and *Microsoft Excel*, includes data-base capabilities, but it is important to understand the limitations of these functions compared to full-fledged data-base management software.

What you get here is really a spreadsheet approach to dealing with data. First, you enter your information across columns. Then, you use built-in functions to sort the data or search for those items that meet your specifications and copy them into another section. These capabilities are better than nothing, but they don't compare to the reporting capabilities of even a moderately sophisticated dedicated data-base program.

Sideways printing. Your worksheet printouts are generally limited to the width of your printer, which is ordinarily 80 characters, or up to 136 characters using compressed type. Sometimes this just isn't enough room to fit all the columns you would like, though. One solution is to print out the spreadsheet in sections (many programs do this automatically). An alternative is a neat utility program that lets you turn the printout on its side, allowing you to include as many columns as you need on continuous-form paper (of course, that means the depth of the rows printed is now limited, but at least the option exists). Originally available only as an extra-cost software add-on program, this useful utility is now included in several spreadsheet packages.

Copy protection. Copy-protected game software is an inconvenience, but rarely a disaster. The worst that can

happen is your disk will crash, and you'll be deprived of the joys of exploring dungeons or zapping aliens until the publisher sends a replacement. However, spreadsheets, just like word processors or other productivity programs, are vital tools for many of us, and if they crash, we burn. We have noted copy protection or the lack of it in our recommended software listings.

On-line help. It is always useful to have a screen of advice available at the touch of a key in addition to the users' manuals.

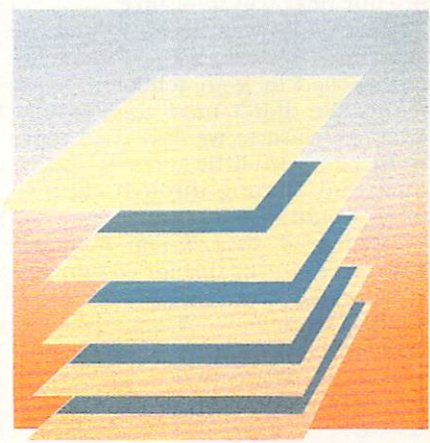
RECOMMENDATIONS

Spreadsheet software is different from other forms of productivity software in an interesting way. While an advanced word processor, relational data base, or business graphics program may be too difficult for a novice to use even at its basic levels, beginners and veterans alike can generally use the same spreadsheet software, each at his or her own level of expertise and interest.

The intimidation factor involved in using a powerful program like *Microsoft Excel* is substantial, with manuals as thick as your wrist and lists of commands that seem to go on forever. Rest assured, though—you can make lightweight use of heavyweight spreadsheet software, if that's what you want to do. The learning process is no more difficult than it would be for a less powerful package, the basic commands aren't any more complicated, and there are actually more books and articles available to lead you by the hand than there are for less popular, less powerful programs. For some, another potential advantage of dealing with the heavyweights is compatibility of your work with the work done at the office.

Price, though, is a major factor to be considered. The *Planner's Choice* spreadsheet, for instance, has all the functions I personally need, and its list price is a mere \$50, compared with \$495 for the latest release of *Lotus 1-2-3*. For IBM or compatible users concerned about their pocketbooks, there are several good *1-2-3* clones priced around the \$100 mark.

Look for the practical and convenient features that suit you at a price you can afford. Today's spreadsheet software can perform more tricks than Rex the Wonder Dog (I even found one for the Amiga that can talk!). Just look for the features that are meaningful to you and remember (it's been hard for me)—the columns run up and down the screen and the rows go from side to side. ☐



Parlez Français... With Your Computer

FOREIGN-LANGUAGE SOFTWARE CAN HELP YOU MINIMIZE FAUX PAS WHILE TRAVELING ABROAD

BY ANN E. LAFORGE

You might dream of the thrill and glamour of vacationing in a foreign land. But, if you don't know the language, your dream can turn to a nightmare. The simplest tasks—making a phone call, getting directions, or ordering food—all too easily become exercises in frustration.

During one trip to Germany, my husband, Christopher, and I went to a lovely restaurant for dinner. We chose an appetizer called "press-kopf," because the only other choice was pâté, which neither of us relishes. "What could it be?" I asked Christopher as we eagerly awaited our meal. "I don't know," he replied, "but 'kopf' means 'head' in German." We laughed. The waiter brought the plates and there, in a slithering mass, was headcheese, a jellied loaf made from the head and feet of a pig. Not our cup of tea.

Another time, while driving from Germany to Luxembourg to catch our plane to the United States, Christopher and I decided to cut through France. We turned onto the French highway, and the strange signs meant nothing to us. But one sign that said "péage" appeared so frequently that we began to speculate about its meaning.

Then it dawned on us: Péage is one of those foreign words that sounds like what it means in English. You might translate it as "pay-us." We were driving on a French toll-highway with nothing but German Deutschmarks in our pockets!

Determined never again to have to explain a dilemma in sign language to a sympathetic but baffled and non-English-speaking toll-taker, or, for

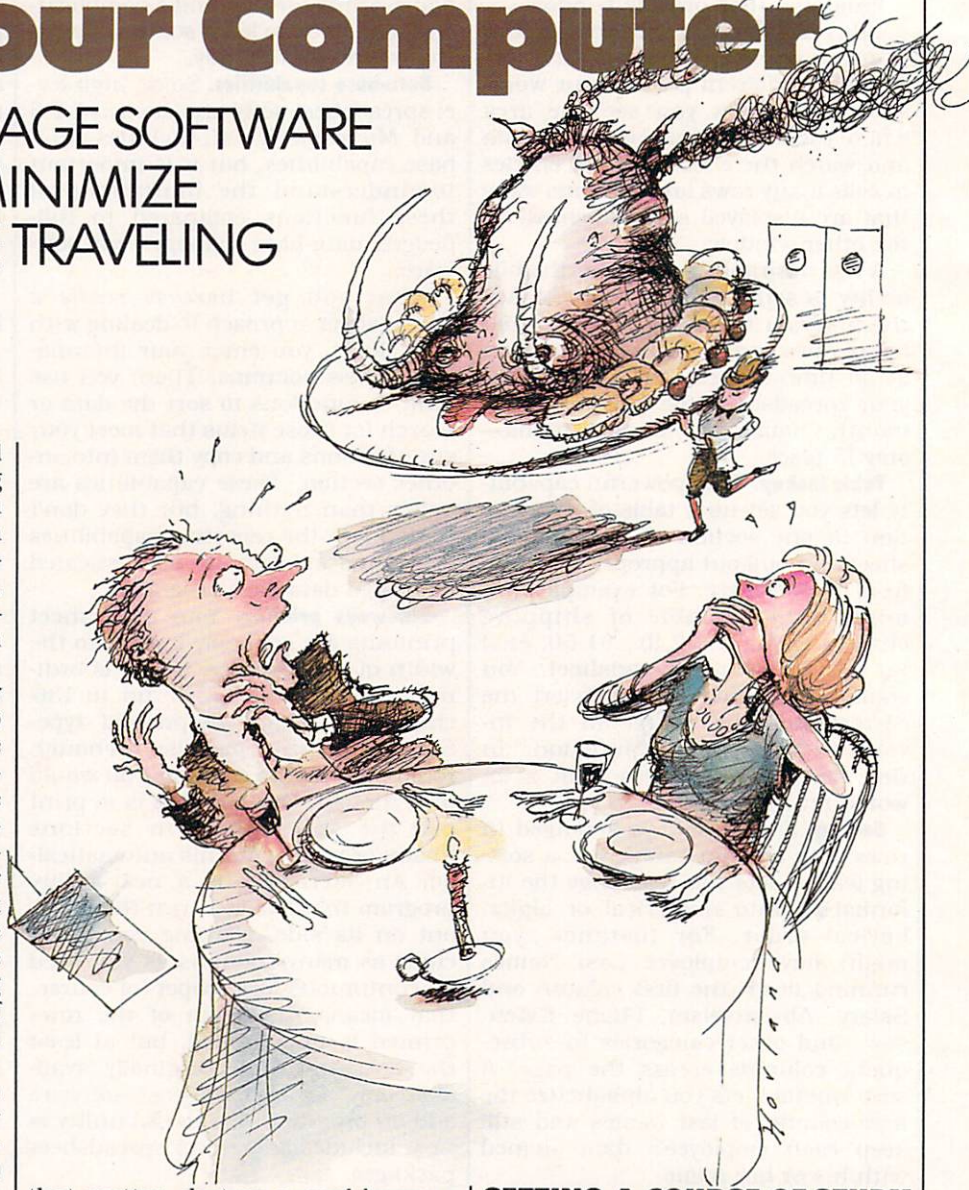
that matter, destroy a meal because we can't understand the menu—we decided to bone up on vocabulary before our next trip to France.

The trouble was deciding how we could best reawaken the French we had learned in high school 10 years before. We didn't have time to take language classes; we had tried tapes in the past with little success; and we knew that flipping through old textbooks would be a lost cause.

I had read that foreign-language software was available for computers, so I decided that it was time to use our trusty Apple IIc for something besides word processing. A few months before our vacation departure date, we began searching for appropriate software.

SETTING A COURSE OF STUDY

After considering a wide range of titles, we narrowed down our course of study to four main programs: *Bataille de Mots* (Gessler Educational Software), a four-part vocabulary-building program adapted from the popular *Word Attack* game by Davidson & Associates; *French Linkword* (Artworx), a vocabulary, grammar, and pronunciation program that links foreign words to acoustically similar English words to provide easy-to-remember visual associations; *Mesaventures Culturelles* (Gessler), a fun and simple program that includes 12 mini-dramas illustrating common cross-cultural misunderstandings; and *Tickets to Paris* (Blue Lion Software), a travel simula-



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ILLUSTRATION BY GARY HOWLAND

FOREIGN-LANGUAGE SOFTWARE

Publisher	Title	Brief Description	Languages	Price	Computers
Artworx Software (716) 385-6120 (800) 828-6573 (outside NY)	<i>Linkword</i>	Learn a foreign language by linking the foreign words with English words that sound similar. Audiotape included.	Dutch, French, German, Greek, Italian, Portuguese, Russian, Spanish	\$25-\$30	Amiga, Apple II series, Atari, Atari ST, C 64/128, IBM PC/PCjr & compatibles, and Macintosh
Blue Lion Software (617) 876-2500	<i>Ticket to Paris</i>	Software travel simulation game that teaches French while you learn French culture.	French	\$30-\$40	Apple II series, C 64/128, and IBM PC/PCjr & compatibles
Control Data (612) 921-6805	<i>Classroom Words Travel Vocabulary Vocabulary Builder Create-A-Vocabulary Vocabulary for Shopping</i>	Five-part series for each foreign language.	French, German, Spanish	\$40-\$50	Apple IIe/II Plus and IBM PC & compatibles
EMC Publishing (612) 771-1555	<i>Let's Practice</i> (Lessons 1-3)	Features cultural simulations, grammar tutorial, and drills that teach colloquial and formal language.	French, German, Italian, Portuguese, Russian, Spanish	\$40; \$105 for all three lessons	Apple IIe/IIc
Gessler Educational Software (212) 673-3113	<i>Bataille de Mots Wortgefecht Batalla de Palabras</i>	Teaches vocabulary for food, school, sports, and travel.	French, German, Spanish	\$50	Apple II series, C 64/128, and IBM PC/PCjr & compatibles
	<i>French Micro Scrabble</i>	Built-in 20,000-word vocabulary.	English, French	\$38-\$40	Apple II series, C 64/128, IBM PC/PCjr & compatibles, and Macintosh
	<i>La Carte de France</i>	Explore culture, geography, and history of France.	French	\$40	Apple II series
	<i>La Guillotine La Corrida de Toros</i>	Learn hundreds of words in this vocabulary review.	French, Spanish	\$30	Apple II series, C 64/128, IBM PC/PCjr & compatibles, and Tandy Models I/III/4
	<i>Mesaventures Culturelles</i>	Reveals French-English differences and similarities.	French	\$30	Apple II series and Tandy Models I/III/4
Learning Well by Mindscape (312) 480-7667	<i>Banque de Mots Banco de Palabras</i>	Review over 1,300 vocabulary words.	French, Spanish	\$50	Apple II series
	<i>Jeux de Vocabulaire Juegos de Vocabulario</i>	Reinforce word associations for over 1,000 words.	French, Spanish	\$50	Apple II series
Roger Wagner Publishing (619) 562-3670	<i>Spanish for the Traveler</i>	Learn practical Spanish for dining, shopping, and touring.	Spanish	\$60	Apple II series and IBM PC/PCjr & compatibles

tion game that teaches French language and culture.

While the cost of a few good foreign-language programs approached the fee for taking a six- or 12-week course, the computerized lessons offered many advantages: Christopher and I could *both* learn French; we could "attend class" at our own convenience; and the learning wasn't over after 12 lessons.

Thanks to our computer language course, we felt more confident than we ever had before while traveling in a foreign country. I found myself better able to understand signs, communicate simple needs, and make educated guesses about word meanings when I was really stumped. I even tried conversations that I would normally never attempt in a foreign tongue, such as asking for extra towels, complaining when I was short-changed, and engaging in small talk.

STEPS TO SUCCESS

Anyone can bone up on a language with the help of a computer. But whether you're learning French, Spanish, Italian, German, Swedish, or even Greek, it takes time, patience, organization, and dedication to get the most out of the software you buy. Based on my own experi-

ence, I suggest these seven steps to success:

1. Choose a variety of programs. Many of the programs on the market are basic drill-and-practice routines, which can become extremely tedious. In addition, no one program does everything. Some are very good at helping you memorize, some are good at drilling you, and others are good at pointing out masculine and feminine nouns and accent marks.

2. The most important thing to remember when buying the software is to be realistic about your skill level. If you've never had any exposure to the language, don't choose a program designed for intermediate level.

3. Set a specific schedule for working with your foreign-language software, and strive to stick with it. You'll get the best results if you set aside a block of time—at least half an hour—to work with the software every day.

4. Concentrate on the vocabulary sections that will most directly affect you as a traveler: food, transportation, shopping, geography, etc.

5. Whenever possible, get someone else to work with you at the computer. Once or twice a week, Christopher and I would sit down and work on a program together. After a few weeks, we even tried a little two-way conver-

sation in French. Of course, we fumbled along. But I figured that if I couldn't bring myself to practice French in front of my husband in my own home, I'd never open my mouth in France.

6. Don't expect more than the computer can realistically give. While a computer can be an interesting tool for learning a foreign language, it will not guarantee fluency in whatever you study. How much you learn will depend on how willing you are to spend time working with the software and practicing.

7. Also, if you're using the software to learn a language that you've never been exposed to before, you should be aware of the system's inherent limitations. No matter how good your machine's sound capability is, the computer can't speak to you with a flawless foreign accent, nor can it correct your attempts to sound authentic.

Without a doubt, the most important benefit of having boned up on French with the help of my computer was not in conversation but in comprehension. I found that this time in Europe, when people stood before me speaking excitedly and gesturing wildly, I could figure out exactly what I was doing wrong! ☐

NEW HARDWARE

MACINTOSH II AND MACINTOSH SE

Color, Slots, and an MS-DOS Option

These are product previews—not reviews—based on press information and a day spent viewing the machines at Apple headquarters.

Apple recently unveiled two new Macintosh models, and one has everything "Macophiles" have been chanting for: color, expansion slots, a bigger screen, more speed, and the potential to run IBM software. Like the new Amiga 2000 (see April's *New Hardware*), the new Macintosh II is a fast, glitzy, graphics-oriented machine with the old-fashioned open architecture that made the Apple II and IBM PC so successful.

The Macintosh SE (System Expansion) is not nearly so radical. It's basically a Macintosh Plus with an expansion slot, plus the space for two internal disk drives.

With the two new Macintoshes, Apple can now talk about its computers the way Chevrolet talks about its cars. Apple sees the Macintosh 512K and Macintosh Plus as "entry-level" machines; the Macintosh SE is a "mainstream" product, and the Macintosh II is a "high-performance" machine.

MACINTOSH II

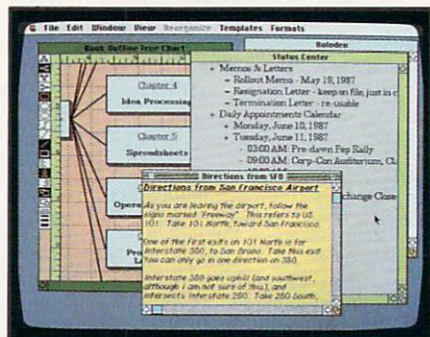
Apple expects that the Macintosh II will run most existing Macintosh software, as well as new high-performance software that takes advantage of its new microprocessor.

The Macintosh II uses the Motorola 68020 microprocessor, the next step up from the Motorola 68000 used in all the other Macintoshes, Amigas, and Atari STs.

Besides the main chip, the Macintosh II has a Motorola 68881 arithmetic co-processor, which speeds mathematical calculations and generates graphics on the screen much more quickly.

In a break with the original Macintosh design, the II's monitor sits atop the system unit but is not connected to it. In fact, the new system is rather bulky and has much the same shape as an IBM AT!

The Apple RGB color unit measures 13 inches diagonally and displays a very sharp image. However, it has 69 dots per inch, compared with 72 dots per inch on Macin-



More Version 1.16 (Living Videotext) shows off the color capability of the Macintosh II.

tosh's standard 9-inch black-and-white screen. But the difference in display should be imperceptible, even when you are running software designed for the older screen.

The screen resolution of 640 x 480 (the same on both color and monochrome monitors) provides higher resolution than the EGA monitors for MS-DOS machines. Both color and monochrome monitors require a video card installed in one of the six expansion slots.

Another big improvement in the

MACINTOSH SE FACTS

PRICE: \$2,898–\$3,698, depending on options

MEMORY: 1-MB RAM, expandable to 4 MB internally; 256K ROM

HARDWARE INCLUDED: System unit with 9-inch black-and-white monitor built in; keyboard; two 800K 3.5-inch disk drives or one 800K 3.5-inch and one 20-MB SCSI hard-disk drive; mouse

INTERFACES: Two serial ports, SCSI interface; sound port for external amplifier; two keyboard/mouse connectors

EXPANSION SLOTS: One

SCREEN DISPLAY: 512 x 342 pixels, black and white

SOUND: Four-voice sound

MACINTOSH II FACTS

PRICE: \$3,898–\$5,498, depending on options

MEMORY: 1-MB RAM, expandable to 8 MB internally; 256K ROM

HARDWARE INCLUDED: System unit (monitor sold separately); keyboard; two 800K 3.5-inch disk drives and a 20-, 40-, or 80-megabyte hard-disk drive; mouse

INTERFACES: Two serial ports; SCSI port; two keyboard/mouse ports

EXPANSION SLOTS: Six

SCREEN DISPLAY: 640 x 480, color or monochrome; up to 16 colors with standard video card; up to 256 with upgrade card

SOUND: Four-voice stereo sound

Macintosh II is the custom sound chip, which provides four-voice stereo output. Didier Diaz, product manager for the Macintosh II, says the sound chip is relatively self-sufficient, so developers will be able to enhance new programs with sound without making too many compromises.

MACINTOSH SE

The expansion slot on the SE—the primary improvement over the Macintosh Plus—should inspire a deluge of third-party add-ons. Accelerators, color video cards, and MS-DOS co-processors are expected in the first wave of new products. Unfortunately, Apple's color video cards for the Macintosh II won't work on the SE, but a color card from a third party can be expected.

The Macintosh SE is about the same size as the Macintosh Plus, but the guts of the machine take up considerably less space. This compression leaves room for the expansion slot and a second internal disk drive, which can be a 3.5-inch 800K drive or a hard-disk drive.

The SE also performs some tasks 15-20 percent faster and transfers data through the SCSI port considerably faster than the Plus does, according to Apple.

MS-DOS OPTION

By adding disk-controller cards or co-processor cards, both Macintoshes have the ability to read MS-DOS data files and/or run MS-DOS software. The controller card, which fits inside the machine, has a connector for an external MS-DOS drive. The co-processor card, however, contains a built-in controller card.

To transfer MS-DOS files to either machine, you will also need a specific Macintosh software utility that will convert programs and files from MS-DOS to Macintosh format.

To actually run MS-DOS programs, such as Lotus 1-2-3, you must add either the 8086 (for the SE) or the 80286 (for the II) co-processor card. Apple will sell the controller cards and the utility software; a third party will sell the MS-DOS co-processor cards. Prices were not fixed at press time. —NICK SULLIVAN

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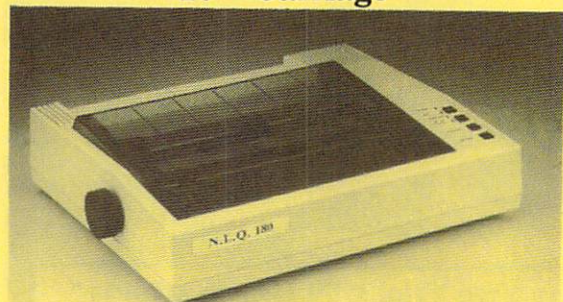
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Printing Speed

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Elite enlarged: 6 cpi 48 cpl

Condensed: 17 cpi 132 cpl

Condensed enlarged: 8.5 cpi 66 cpl

Condensed elite: 20 cpi 160 cpl

INTERFACES

Atari \$39.95 Apple \$44.95 Commodore \$29.95 IBM \$49.95 Laser 128 \$19.95 Macintosh \$49.95

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SOFTWARE GUIDE

Welcome to FAMILY COMPUTING's Software Guide, the most comprehensive listing available of two dozen of the newest, most noteworthy, and/or best programs on the market. Our reviewers include families from all over the country who have judged the software according to the following criteria: long-term benefits and applications, adaptability, and advantages of using a computer for a given task. Programs have been evaluated and rated for their performance in each of the categories listed below. More detailed reviews follow the chart. Unless otherwise noted, all programs are in disk format, and minimum memory requirements are 48K for Apple II series, 48K for Atari, 128K for IBM PC/PCjr or compatibles, and 128K for Macintosh. "Atari" alone denotes the 800/XL/XE series. "C 64/128" means the software will run on both a C 64 and a C 128 computer in C-64 mode; "C 128" alone means the software will run only on that machine.

Here's a rundown of the rating categories and what they mean: **O** = Overall performance, given the limitations and capacities of the particular computer for which the software is intended. **D** = Documentation, or the instructions and literature that accompany a program. **EH** = Error-handling, the software's capacity to accommodate errors made by the user—an especially important consideration with software for younger users. **PS** = Play system (in the games reviews), the quality of the game design and the game's playability. **GQ** = Graphics quality, also evaluated in light of each particular brand's graphics capabilities. **EU** = Ease of use after the initial learning period, which varies from computer to computer. **V** = Value for money, or how the software measures up to its price.

EDUCATION/FUN LEARNING

Title Publisher Price	Brief description	Hardware/ Equipment required	Backup policy	Ratings						
				O	D	EH	GQ	EU	V	
FIRST SHAPES First Byte, Inc. 2845 Temple Ave. Long Beach, CA 90806 (213) 595-7006 \$50 ©1986	Activities for youngsters (ages 3-8) that talk. Includes shape matching, building on-screen toys, and a memory game. Also teaches the names of shapes and the concepts of larger and smaller. Lots of fun.† —SUMMERS	Reviewed on 512K Amiga. Also for Apple IIgs, Atari ST, C 64/128, 512K Macintosh.	90-day warranty. \$15 for backup.	★ ★ ★ ★	★ ★ ★ ★	★ ★ ★ ★	★ ★ ★ ★	E	★ ★ ★ ★	
SEE THE U.S.A. Compu-Teach Inc. 78 Olive St. New Haven, CT 06511 (203) 777-7738 \$60 ©1986	Players crisscross the country to learn the names of states and their capitals, mottos, flowers, and other facts. The quiz games are enjoyable; best for ages 6-10. Parents might need to help their kids, though. —FRANK	64K Apple. 2nd drive.	90-day warranty. Not copy-protected.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★	A	★ ★ ★	
STICKYBEAR READING COMPREHENSION Weekly Reader Family Software 245 Long Hill Road Middletown, CT 06457 (203) 638-2400 \$40 ©1986	Children can choose to read more than 30 interesting stories at various reading levels; then they answer multiple-choice questions. But the workout format is somewhat static—it's no different than reading programs I used five years ago. For ages 8-11. —SUTHERLAND	Apple.	90-day warranty. \$10 for backup.	★ ★	★ ★	★ ★	★ ★	E	★ ★	
TALKING TEXT WRITER Scholastic Software 730 Broadway New York, NY 10003 (212) 505-3501 \$250 ©1986	By making the word processor talk with synthesized speech, children get both visual and auditory feedback that helps them improve language skills. Package includes the speech synthesizer.† —SOLOMON	128K Apple IIe/IIc/IIgs. Echo + or Cricket. Color monitor, printer optional.	60-day warranty. \$10 for 10 months thereafter.	★ ★ ★	★ ★ ★	★ ★ ★	N/A	A	★ ★ ★	
THE TOY SHOP Broderbund Software 17 Paul Drive San Rafael, CA 94903 (415) 479-1170 \$60-\$65 ©1986	Create startlingly detailed print-outs of parts to construct 20 different models—airplanes, cars, engines, even a working scale and a mechanical bank. Once you've completed all the models, though, there's nothing more to do. —MORRIS	Reviewed on 64K Apple. Also for C 64/128, IBM PC/PCjr,* Macintosh. 2nd drive, joystick recommended.	90-day warranty. \$7.50 thereafter. \$10 for backup.	★ ★	★ ★	★ ★	★ ★ ★	@	★ ★ ★	

RATINGS KEY **O** Overall performance; **D** Documentation; **EH** Error-handling; **GQ** Graphics quality; **EU** Ease of use; **V** Value for money; **O** Poor; **★** Average; **★★** Good; **★★★** Very Good; **★★★★** Excellent; **N/A** Not applicable; **E** Easy; **A** Average; **D** Difficult; **@** Easy to difficult, depending on model; **†** Longer review follows chart

*Titles listed for the IBM PC/PCjr will also run on many IBM PC compatibles; owing to the proliferation of compatibles, check with the publisher of the program or your dealer for compatibility.

HOME BUSINESS & PRODUCTIVITY

Title Publisher Price	Brief description	Hardware/ Equipment required	Backup policy	Ratings					
				O	D	EH	GQ	EU	V
AUTOWORKS The Software Touch 9625 Black Mountain Rd. San Diego, CA 92126 (619) 549-3091 \$50 ©1986	Adds new power to <i>AppleWorks</i> , such as a mail-merge function, macros to speed repetitive work, and mouse capabilities for the word processor, data base, and spreadsheet.† —KOVACS	128K Apple IIe/IIc/IIgs. <i>AppleWorks</i> . Mouse optional.	Sold as is. Not copy-protected.	★ ★ ★	★ ★ ★	★ ★ ★	N/A ★ ★	A ★ ★	★ ★ ★
CLICKART PERSONAL PUBLISHER Software Publishing Corp. 1901 Landings Drive Mountain View, CA 94043 (415) 962-8910 \$129 ©1986	Capable desktop publishing package that works with dot-matrix printers. Handsome Macintosh-like screens and simple command structure make page-layout fun. Slow speed limits it to short publications, though. —MORGENSTERN	512K IBM PC.* 2nd drive, color graphics adapter. Mouse optional.	90-day warranty. \$15 thereafter. Not copy-protected.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★	E ★ ★	★ ★ ★
DELUXE VIDEO Electronic Arts 1820 Gateway Drive San Mateo, CA 94404 (415) 571-7171 \$100 ©1986	Works with Electronic Arts' <i>DeluxePaint</i> (to create visuals) and <i>Instant Music</i> (to create music and sound effects) to help you make videos. Watch them on-screen or record on videotape. —SUMMERS	512K Amiga. 2nd drive recommended.	90-day warranty. \$7.50 thereafter.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★	A ★ ★	★ ★ ★
FINANCIAL CONSULTANT Advanced Logic Systems 1283 Reamwood Ave. Sunnyvale, CA 94089 (408) 747-1988 \$90 ©1986	A handy little package for financial questions, such as calculating loans, predicting IRA values, and doing break-even analysis. Can run as a stand-alone or as a memory-resident program. —SUMMERS	IBM PC/PCjr.*	90-day warranty. Not copy-protected.	★ ★ ★	★ ★ ★	★ ★ ★	N/A ★ ★	E ★ ★	★ ★ ★
MACROWORKS Beagle Bros, Inc. 3990 Old Town Ave. San Diego, CA 92110 (619) 296-6400 \$35 ©1986	An <i>AppleWorks</i> companion that features complete macro capabilities, greatly increasing its ease and speed of use. The package also comes with extras, such as a multiple-column printout function.† —KOVACS	128K Apple IIe/IIc/IIgs. <i>AppleWorks</i> . Mouse optional.	30-day warranty. Not copy-protected.	★ ★ ★	★ ★ ★	★ ★ ★	N/A ★ ★	E ★ ★	★ ★ ★
ON BALANCE Broderbund Software 17 Paul Drive San Rafael, CA 94903 (415) 479-1170 \$100 ©1986	Home-finance software that distinguishes itself through ease of use. Offers four kinds of reports, including net worth and transactions. I wish it had a financial calculation function, however. —MORGENSTERN	128K Apple IIe/IIc. 2nd drive recommended. Mouse optional.	90-day warranty. Not copy-protected.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★	E ★ ★	★ ★ ★
PFS: PROFESSIONAL WRITE Software Publishing Corp. (see above for address and phone) \$199 ©1986	Elegant yet easy word processor that includes an excellent spelling checker, a thesaurus, and macro capability. You can learn it in less than an hour.† —MORGENSTERN	320K IBM PC.* 2nd drive.	90-day warranty. \$15 thereafter. Not copy-protected.	★ ★ ★	★ ★ ★	★ ★ ★	N/A ★ ★	E ★ ★	★ ★ ★
REGENT WORD II Regent Software 7131 Owensmouth, #45A Canoga Park, CA 91303 (818) 882-2800 \$100 ©1986	Word processing with power and true user friendliness. But the manual is inadequate, and the program tends to lock up and stop working without warning. If the publishers improve it, however, consider buying it. —BRADLEY	Atari ST. 1040ST recommended. TOS in ROM.	90-day warranty. \$10 for backup.	★ ★ ★	★ ★ ★	★ ★ ★	N/A ★ ★	E ★ ★	★ ★ ★
SILICON PRESS Silicon Beach Software P.O. Box 261430 San Diego, CA 92126 (619) 695-6956 \$80 ©1985	Print mailing labels, business cards, invitations, tags, and lots more. Graphics can be copied from any appropriate Mac program. Text can be merged from a data base, too. Particularly good for small businesses. —MORRIS	512K Macintosh.	90-day warranty. \$5 thereafter. Not copy-protected.	★ ★ ★ ★	★ ★ ★ ★	★ ★ ★ ★	★ ★ ★ ★	A ★ ★ ★	★ ★ ★ ★

RATINGS KEY O Overall performance; D Documentation; EH Error-handling; GQ Graphics quality; EU Ease of use; V Value for money; O Poor; ★ Average; ★★ Good; ★★★ Very Good; ★★★★ Excellent; N/A Not applicable; E Easy; A Average; D Difficult; † Longer review follows chart

*Titles listed for the IBM PC/PCjr will also run on many IBM PC compatibles; owing to the proliferation of compatibles, check with the publisher of the program or your dealer for compatibility.

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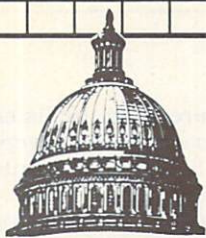
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Title Publisher Price	Brief description	Hardware/ Equipment required	Backup policy	Ratings						
				O	D	PS	GQ	EU	V	
DEFENDER OF THE CROWN Cinemaware/Mindscape 3444 Dundee Road Northbrook, IL 60062 (312) 480-7667 \$50 ©1986	You play the role of a Saxon nobleman, circa 1200, in this medieval adventure that combines dazzling graphics with arcade action. Use strategy to become king of England.† —DELSON	512K Amiga. Color monitor, mouse. 2nd drive recommended.	90-day warranty. \$15 thereafter (\$21 for both disks).	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★	A	★ ★ ★	
DESERT FOX Avantage/Accolade 20813 Stevens Creek Blvd. Cupertino, CA 95014 (408) 446-5757 \$15 ©1985	As a World War II tank commander in the North African desert, you must protect your supply depot against the Nazi forces. Nonstop action keeps your trigger finger busy. —DELSON	C 64/128. Joystick.	90-day warranty. \$6 thereafter. \$10 for backup.	★ ★	★ ★ ★	★ ★ ★	★ ★ ★	A	★ ★ ★	
FERRARI GRAND PRIX Bullseye Software P.O. Drawer 7900 Incline Village, NV 89450 (702) 831-2523 \$60 ©1986	Get behind the wheel of a high-powered Ferrari as you learn the basics of authentic racing, such as breaking, shifting gears, and negotiating some wicked curves. Build race tracks, too. —ADDAMS	512K Macintosh.	90-day warranty. \$10 thereafter.	★ ★	★ ★ ★ ★	★ ★ ★ ★	★ ★ ★ ★	D	★ ★	
GRANDSLAM BRIDGE Electronic Arts 1820 Gateway Drive San Mateo, CA 94404 (415) 571-7171 \$60 ©1986	If you want to learn how to play bridge, this program will help by telling you whether or not you're making the correct move. If you just want to play, then you can choose from over a billion hands! —DELSON	256K IBM PC.* Color monitor, joystick optional.	90-day warranty. \$7 for backup.	★ ★ ★ ★	★ ★ ★ ★	★ ★ ★ ★	★ ★ ★ ★	A	★ ★ ★ ★	
GUNSLINGER Datasoft/IntelliCreations 19808 Nordhoff Place Chatsworth, CA 91311 (818) 886-5922 \$30 ©1986	Beginners can enjoy this text/graphic adventure where they play the part of a western hero out to save a pal from the hangman's noose. Solve puzzles and survive adventures. —DELSON	Reviewed on Apple. Also for Atari, C 64/128. Joystick optional.	90-day warranty. \$7.50 thereafter.	★ ★	★ ★	★ ★ ★	★ ★ ★	A	★ ★	
HIGH STAKES Mindscape, Inc. (see above for address and phone) \$40 ©1986	You're an English millionaire who must recover his stolen race horse in this text-only adventure based on the Dick Francis mystery. Some interaction, but primarily a puzzler. —ADDAMS	Reviewed on 64K Apple. Also for IBM PC,* 256K IBM PCjr, Macintosh.	90-day warranty. \$12.50 for backup.	★ ★	★ ★	★ ★	N/A	A	★ ★	
MOONMIST Infocom 125 Cambridge Park Drive Cambridge, MA 02138 (617) 492-6000 \$35-\$40 ©1986	This text-only adventure, set in a haunted castle, offers you three goals: find a treasure, identify the ghost, and dig up evidence of a crime. With four variations on the theme, it's quite replayable.† —ADDAMS	Reviewed on Apple. Also for Amiga, Atari, Atari ST, C 64/128, IBM PC/PCjr,* Macintosh.	90-day warranty. \$5 thereafter. Not copy-protected.	★ ★ ★	★ ★ ★	★ ★ ★	N/A	E	★ ★ ★	
THE OFFICIAL AMERICA'S CUP SAILING SIMULATION Electronic Arts (see above for address and phone) \$33 ©1986	Put yourself at the helm of a 12-meter yacht in this simulation of the America's Cup races. Choose type of sail and maneuver around the course altering your tactics to take full advantage of the wind. —DELSON	C 64/128. Joystick(s).	90-day warranty. \$7.50 thereafter.	★ ★ ★	★ ★ ★ ★	★ ★ ★ ★	★ ★ ★ ★	A	★ ★ ★	
SUB MISSION Mindscape, Inc. (see above for address and phone) \$40 ©1986	Rescue a pair of hostages by defeating the Warlord in an underwater war game that plays like a submarine simulator. But run out of air, and a hostage is erased from your disk!† —ADDAMS	Reviewed on 64K Apple. Also for 256K IBM PC/PCjr.* Joystick optional.	90-day warranty. \$12.50 for backup.	★ ★ ★	★ ★ ★ ★	★ ★ ★ ★	★ ★ ★ ★	A	★ ★ ★	
WORLD KARATE CHAMPIONSHIP Epyx, Inc. 600 Galveston Drive Redwood City, CA 94063 (415) 366-0606 \$30-\$35 ©1986	Karate, I learned from this game, is like ballet: You've got to choreograph your moves, then execute them with precision timing. With 14 authentic karate moves and smooth animation. —ADDAMS	Reviewed on 64K Apple. Also for Atari, Atari ST, C 64/128, IBM PC/PCjr.* Joystick.	90-day warranty. \$5 thereafter.	★ ★	★ ★	★ ★ ★ ★	★ ★ ★ ★	D	★ ★	

RATINGS KEY ● Overall performance: **D** Documentation; **PS** Play System; **GQ** Graphics quality; **EU** Ease of use; **V** Value for money; ○ Poor; ★ Average; ★★ Good; ★★★ Very Good; ★★★★ Excellent; N/A Not applicable; E Easy; A Average; D Difficult; † Longer review follows chart

*Titles listed for the IBM PC/PCjr will also run on many IBM PC compatibles; owing to the proliferation of compatibles, check with the publisher of the program or your dealer for compatibility.

RATINGS KEY O Overall performance; D Documentation; PS Play System; GQ Graphics quality; EU Ease of use; V Value for money; ○ Poor; ★ Average; ★★ Good; ★★★ Very Good; ★★★★ Excellent; N/A Not applicable; E Easy; A Average; D Difficult; † Longer review follows chart

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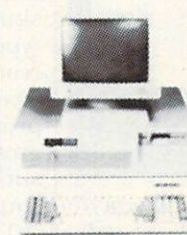
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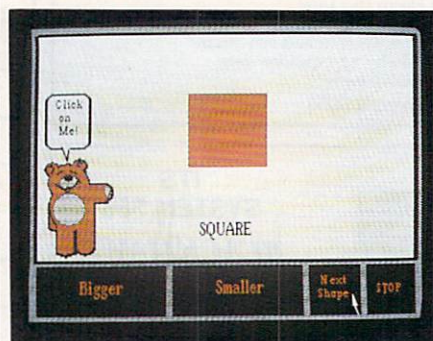
On the following pages, you'll find in-depth reviews of some of the programs listed in the Software Guide. Refer back to the Guide on page 46 for information such as backup policies and addresses of software publishers.

EDUCATION/ FUN LEARNING

First Shapes

HARDWARE REQUIREMENTS: 512K
Amiga, Apple IIGS, Atari ST, C 64/
128, 512K Macintosh.
PUBLISHER: First Byte, Inc.
PRICE: \$50
PUBLISHER'S SUGGESTED AGES: 3-8

A game for toddlers that toddlers really can play, *First Shapes* teaches shape-recognition skills in an environment that grows along with your child. Instructions are spoken aloud by Ted E. Bear, the on-screen host, so even pre-readers can get involved with the game.



Five different learning activities are selected from a mouse-operated picture menu. The Shapes section teaches children to recognize five basic geometric figures, such as triangles, circles, and ovals. Children can make the shapes larger or smaller, and they can ask Ted E. Bear to say the name of any shape. Next, children get to build toys from the shapes. The computer gamely goes along with whatever the child suggests, even if that's a train with square wheels and an oval coal car.

Make-A-Match is a classic memory game—like television's "Concentration"—in which children peek at two shapes each turn and then must remember where they are to make matches. Players select difficulty levels ranging from games of five matches to games with sixteen; they can play alone, with a friend, or against the computer. When playing against the computer, children can

decide whether Ted E. Bear will be silly, smart, or very smart.

At first, 5-year-old Todd sometimes had to ask a helper what the computer had said, but after a few sessions could understand it with no trouble. And Todd wasn't the only one who enjoyed making silly toys and beating Ted E. Bear at Make-A-Match: An older brother and sister waited in line for their turns, too. We highly recommend this program for any child old enough to click a mouse button and predict that Ted E. Bear will be a favorite companion for years to come.

—TAN A. SUMMERS

Talking Text Writer

HARDWARE REQUIREMENTS: 128K Apple IIe/IIc/IIGS.
PUBLISHER: Scholastic Software
PRICE: \$250
PUBLISHER'S SUGGESTED AGES: 5-12

On occasion, I've spoken to my computer, but it never talked back to me before. Now, with *Talking Text Writer* and its accompanying speech synthesizer, my Apple speaks loudly and clearly—although it sounds like an alien from another planet is practicing English inside it.

I watched children who are learning to read and write practice their skills. Six-year-old Amy, for example, typed the alphabet in large, easy-to-read letters on a 20-column screen. The letters flashed and the computer pronounced each one. She progressed to typing nonsense syllables such as "zyz" and learned how sound relates to printed letters.

Third-grader Lori typed whole words on a 40-column screen. Some of the words sounded strange, so she used the "fix speech" feature to tell the computer how to pronounce her words. Unfortunately, the pronunciation didn't improve considerably after she entered the phonetic spelling.

The disadvantage of using a speech synthesizer to produce speech is that the words sound like typical computer talk. The advantage, however, is that a speech synthesizer can access an unlimited vocabulary, as contrasted to the alternative—a digitized voice that can speak specific words only. Lori didn't mind the occasional artificial pronunciations because she loved typing and then hearing her own words.

Nine-year-old Jason used the advanced, 80-column option to type a

brief adventure story. He listened to it several times, called in everyone else to hear it, and then printed out a copy for posterity.

Talking Text Writer encourages young children to write, to write more, and to write more often. It can also help youngsters with speech and hearing loss and other communication disabilities to reinforce language skills. With *Talking Text Writer*, children use computer technology as a tool instead of as a toy, yet the fun of the auditory, visual, and tactile feedback motivates them to acquire and perfect language skills.

Talking Text Writer is an expensive program. While not a necessity for children without reading problems, it can help those youngsters gain greater language skills more quickly. For teachers, clinicians, and parents of children with language impairment, it is a worthwhile investment that will increase the likelihood of success with literacy skills.

—GWEN SOLOMON

HOME BUSINESS & PRODUCTIVITY

AutoWorks

HARDWARE REQUIREMENTS: 128K Apple IIe/IIc/IIGS.
PUBLISHER: The Software Touch
PRICE: \$50

MacroWorks

HARDWARE REQUIREMENTS: 128K Apple IIe/IIc/IIGS.
PUBLISHER: Beagle Brothers, Inc.
PRICE: \$35

People who work with *AppleWorks* have a lot of spare time on their hands—albeit in 20-second segments—while the disk drives chug away. Though some might view this delay as a golden opportunity to collect their thoughts, others are annoyed by it. *AppleWorks* also has some omissions in its design, which become ever more galling with long-term use. Fortunately, *AppleWorks* was developed with expansion in mind.

Two add-on packages that effectively take up where *AppleWorks* leaves off are *MacroWorks* and *AutoWorks*. Both rely on macros (which convert lengthy series of keystrokes into new, two-keystroke *AppleWorks* commands) to increase productivity. Both add mouse capability to *AppleWorks*, too, and

AutoWorks also has a mail-merge option—an indispensable adjunct to any serious business use of *AppleWorks*.

When using *MacroWorks*, I particularly enjoyed the various new commands that the macro function offers, such as being able to move the cursor instantly to the beginning or end of a line. In addition, it's great to be able to add files to the desktop without having to wade through a long series of menus, to find a word without having to erase the previous word sought, and to print without running through the prefatory prompts.

In total, 25 predefined macros are included on disk. You can also define 10 "temporary" macros each time you boot up. These can be helpful when you repeat words or phrases. For example, instead of repeatedly typing the 10 strokes necessary to write *AppleWorks* in this review, I merely pressed Closed-Apple-3, and the program's name appeared in my text. Users of the *MacroWorks/AppleWorks* combo can create and save their own macros and can make customized help screens that help them remember any new macros.

In *AutoWorks*, the mail-merge capability alone may make this package worth the price of admission (note, though, that *AppleWorks 2.0*, the latest version, has mail-merge built in). Mail-merge is explained simply and efficiently with *AutoWorks*; it is truly a marvel to watch *AppleWorks* automatically swapping information from its data base to its word processor as a series of form letters are printed out.

It was not so easy (at least not for me) to learn to use *AutoWorks*' built-in macros or its customized macro capability. I think the problem lies in the terminology selected for the package's pop-up menu, as well as documentation that assumes more sophistication and comfort with writing macros than I felt.

Once mastered, the process of recording your own macros with *AutoWorks* is much easier than with *MacroWorks*. Unlike *MacroWorks*, the *AutoWorks/AppleWorks* duo lets you easily add new macros into a file of existing macros. With both packages, the addition of mouse control to *AppleWorks* is a good idea, although I found it difficult to control the exact position of the mouse on an 80-column screen.

Be forewarned, however. Even though each program faithfully mimics the *AppleWorks* command structure, incorporating either into your use of *AppleWorks* might, at first, offer a steep learning curve. Long-time users of macros advocate keeping a printout of new macro commands at your side until they are memorized.

Both *MacroWorks* and *AutoWorks* contain even more features than there's room to mention here, while giving you a significantly improved version of *AppleWorks*. While *MacroWorks* is easier to learn, *AutoWorks* is finally more comprehensive and flexible.

—DEBORAH KOVACS

PFS: Professional Write

HARDWARE REQUIREMENTS: 320K IBM PC.

PUBLISHER: Software Publishing Corp.

PRICE: \$199

As top-of-the-line word-processing software becomes increasingly complex, there has been growing interest in simpler but still sophisticated writing tools. The thrust of these programs is to offer all the basics, plus selected convenience features, in a package that can be learned as quickly as possible. The *PFS* series has long been an ease-of-use leader, and now the publishers have dramatically improved their original *PFS: Write* to produce a version with a host of elegantly presented features and only a few flaws.

PFS: Professional Write provides an excellent on-screen working environment. Line and page position and position on the current line are always visible. Drop-down menus, accessed by function keys, make selection of filing, printing, formatting, and editing commands absolutely simple. Equally important, all the most common commands can be called either from the menu or with a logical control-key combination. Holding down CONTROL while pressing "W" deletes a single word, for example, while CONTROL-L deletes a line, CONTROL-U underlines, and so forth.

A dictionary for checking spelling and a thesaurus for suggesting synonyms are included, and both work well. The macro feature, which records a sequence of keystrokes and plays them back when you hold down ALT and a single letter or number key, allows you to customize

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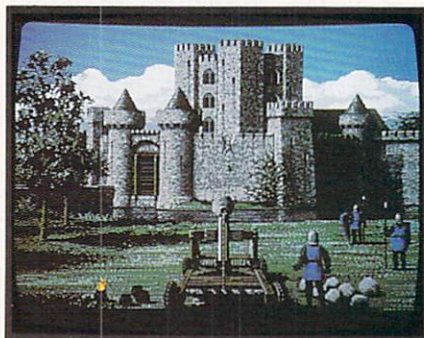
the program to automatically accomplish tasks you perform frequently, such as loading a form letter into memory.

With all that's right about *Professional Write*, I still found a few nagging problems. The program allows only single or double spacing. You are also restricted to a single right-margin setting for the entire document, which makes it impossible to properly indent long quotes. Under ordinary circumstances, page breaks are clearly indicated. However, a page break you insert manually will print properly but not show up on-screen. That makes it impossible to tell where pages will break from then on, which I consider a major flaw.

Students writing academic papers or business typists who work with strictly formatted material should probably invest in a more powerful program and learn it piece by piece. But for someone who doesn't want to muck around with a complex word processor, but still wants access to an excellent spelling checker, a thesaurus, and macro capabilities (in a program you can learn in an hour), *PFS: Professional Write* is a very good choice.

—STEVE MORGENSTERN

charge at you and their lances lowered to strike your shield. You attempt to rescue Saxon damsels in distress, dueling with your sword against the varlets who hold the lovelies captive. And when you besiege the castles of your opponents, you see the walls knocked down by stones hurled from your catapults.



As you unseat foes on the jousting field, you can win portions of their lands. As you rescue damsels in distress, your leadership rating goes up, and as you learn to knock down the enemy walls, castles fall more easily to your armies. All of these actions combine with your skill as a tactician to reconquer England.

The game is designed so that it can be won by using either arcade-style victories, strategic-and-tactical maneuverings, or a combination of the two. But while it's lots of fun to play, and always enthralling to watch, the designers apparently chose to concentrate their energies on the graphics instead of the play system. Thus, once you've mastered each of the game's required skills, it becomes too easy to win.

Defender of the Crown is recommended as an introductory-level strategy-and-tactics program. Intermediate and advanced players should be wary, however, because they might become bored with the game's play system after a few sessions.

—JAMES DELSON

ENTERTAINMENT

Defender of the Crown

HARDWARE REQUIREMENTS: 512K Amiga.

PUBLISHER: Cinemaware, distributed by Mindscape, Inc.

PRICE: \$50

REVIEWER'S SUGGESTED AGES: 12+

When William the Conqueror vanquished the Saxon army at Hastings in 1066, he only began the process of subjugating England. More than 150 years later, the ruling Normans were still putting down rebellions by such colorful characters as Ivanhoe and Robin Hood, who dreamed of a land once again led by a Saxon king. In *Defender of the Crown*, you play the role of a Saxon nobleman whose aim is to defeat the Normans and re-establish the Saxon line on the English throne.

Using a highly refined animation process, the designers of *Defender of the Crown* have created the best set of graphics yet available in a computer game. You joust against Saxon and Norman knights at Ashby, seeing your opponents

Moonmist

HARDWARE REQUIREMENTS: Amiga, Apple, Atari, Atari ST, C 64/128, IBM PC/PCjr, Macintosh.

PUBLISHER: Infocom

PRICE: \$35-\$40

REVIEWER'S SUGGESTED AGES: 11+

The chief drawback to adventure games is their lack of replay value. After you've solved all the puzzles, the game just takes up shelf space.

Moonmist, however, evades this fate by offering four variations on the mystery that takes place in a haunted castle in contemporary England. In each, you must accomplish the same goals: identify the ghost, find a treasure, and uncover evidence of an attempted murder so you can arrest the killer—all within a 12-hour time limit. The castle's layout remains identical (the documentation provides a floor plan), but the ghost's identity varies in each version, and so do the answers to the other mysteries. Not only that, but even the puzzles differ, and a valuable object in one game may prove worthless in another.

Naming your favorite color at the outset determines which version you'll play. After you type in your name and sex, and they're incorporated into the story's dialogue, your friend Tamara shows you around the castle, introducing you as a famous American private detective. You must interact with characters such as the butler, Dr. Wendish, and others, to gather some of the clues, while many others are discovered by manipulating objects.

The plot surfaces at dinner, after Tamara announces her engagement to Lord Jack. Suddenly, the voice of Jack's deceased uncle, Lord Lionel, speaks from a concealed tape recorder. He tells of a treasure hidden in the castle and provides the first clue to its location. These clues consist of brief poems and riddles that lead you to more clues and eventually to the treasure, while creaking doors, cobwebs, and a secret passageway lend suitable atmospherics. Though this is a mystery, all four versions are far easier than *Deadline* or *Suspect*, so it's a good choice for novices.

—SHAY ADDAMS

Sub Mission

HARDWARE REQUIREMENTS: 64K Apple, 256K IBM PC/PCjr.

PUBLISHER: Mindscape, Inc.

PRICE: \$40

REVIEWER'S SUGGESTED AGES: 10+

Sub Mission plays for keeps—if your submarine runs out of air with a human on board, the character is erased from the disk! Your goal is to rescue a pair of hostages, Sigourney and Peter, from the Warlord by beating him at his underwater war game. Victory goes to the first submarine that finds and shoots a deep-

sea mine. Although you direct the sub by remote-control, someone must be on board to execute your orders. A robot can do the job, which is good for practice, but that won't save the hostages, since the rescue requires finding an escape route that only he or she can reveal—bit by bit—while inside the sub.

Controlling the sub is easy. You type commands like "F5" to move forward at a speed of five knots and "D21" to dive to a depth of 21 fathoms. A joystick may be used for steering, but I found the keyboard controls sufficient. The bay's outline is shown in a chart in center screen, and a sonar screen alerts you to the location and depth of underwater mines. You have to shoot these mines in order to find the deep-sea mine.



After hitting an underwater mine with the harpoon gun, you "ignite" with a jolt of electricity to scan the area within a circle that appears in the main display. In a line of text, your crew member notifies you whether the deep-sea mine is inside the circle. Then you can set off one of the five mines carried on the sub to ignite a smaller area within the circle, in hopes of pinpointing the deep-sea mine. The Warlord's sub might attack, rocks and mines present navigational hazards, and you've got to surface regularly to recharge the batteries and get air.

Sound effects are scarce and there's no fast-paced animation, but the suspense is unparalleled as you get closer to discovering the escape route—while the air supply dwindles. A character who dies and is erased can be restored once, but after that you must send the disk (and \$7!) to Mindscape, Inc. to restore them. *Sub Mission* is entertaining because it puts an original twist on the idea of a submarine simulator and exciting because a "life" is really on the line.

—SHAY ADDAMS

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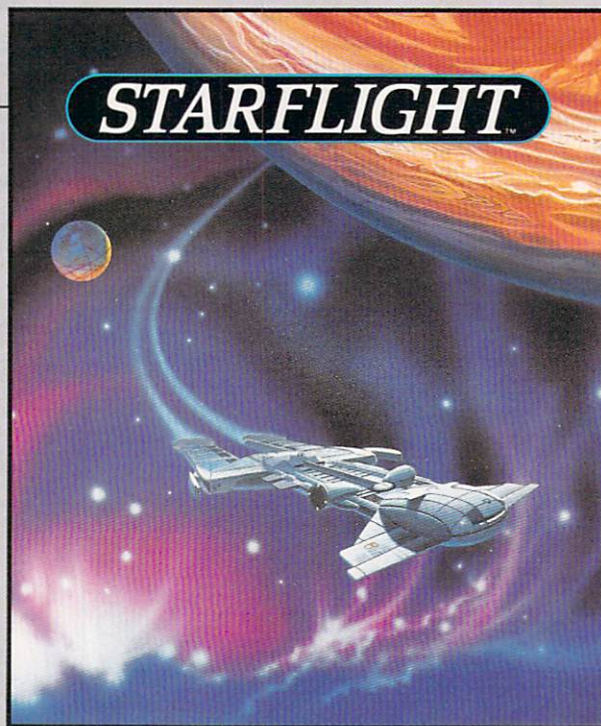
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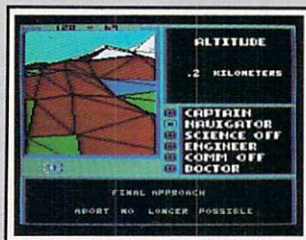


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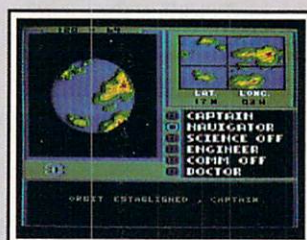
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This Month!!

GAME STRATEGY, page 58
MICROTONES, page 59

**On Top of
Spaghetti Page 59**

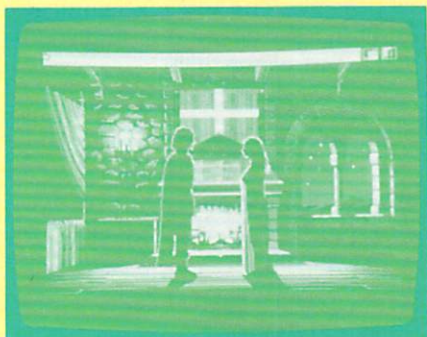
Edited by Bernadette Grey

POK

FOR THE COMPUTER GENERATION

SOFTWARE SCOOP

Have a few laughs with **Accolade Comics**, a computerized interactive comic book that tells the story of a spy named Steve Keene, whose mission is to foil evil plots for the Chief of Spystuff, Inc. You, the player, direct the story line by selecting from a series of possible answers to questions asked of Keene. **Accolade Comics** is available for the Commodore 64/128 (\$39.95) and the Apple II series (\$44.95) from **Accolade** ([408] 446-5757). . . . While the computer age is still young, software publishers are already bringing back some "classic" computer games. **Activision** ([415] 960-0410) recently announced the first in its series of **Solid Gold Software** titles offering entertainment classics in a single package for \$14.95. The first release features two computer game classics—**Pitfall!** and **Demon Attack**—which together have sold over 7 million copies since



CinemaWare's Defender of the Crown

1982. The pack is available for the Commodore 64/128 and Atari XE/XL series. . . . You may have heard that **Mindscape** ([312] 480-7667) has four titles in its new **CinemaWare** interactive text/graphic adventure stories with graphics that are so great that you might think you're at the movies. In **Defender of the Crown**, you're a brave knight whose days are filled with daring jousts, dangerous sword fights, and enemy castles under siege. Use your skills to save En-

gland and win the crown with your Amiga, Apple IIGs, Atari 520ST, Commodore 64/128, or Macintosh (\$34.95-\$49.95). **The King of Chicago** puts you against forces of the legendary Capone mob in battle of control of Chicago. It's available for the Macintosh and versions are planned for the Amiga, Apple IIGs, and Atari 520ST (\$34.95-\$49.95). You'll also want to check out **SDI (Strategic Defense Initiative)**, which throws you into space combat in a state-of-the-art flight simulator and **Sinbad and the Throne of the Falcon**, an epic seafaring quest. Versions for Amiga, Atari ST, and other computers are planned. . . . The less daring can skip the sword fights, space combat, and dangerous seas, and stay safe indoors with **Mindscape's Indoor Sports** (\$29.95). Commodore 64/128 owners can try a little air hockey, bowl a few frames, shoot some darts, or challenge a friend or the computer to a game of table tennis.

OUR FAVORITE CONTEST WINNERS

Last October, we held a contest called "My Favorite," in which we asked our readers to tell us what their favorite games are and why. We collected your responses in a big brown box, chose three of our favorite entries, and awarded these three readers \$10 apiece. Our contest win-

ner, **Jennifer Amy**, 17, of Frederick, Maryland, says that her favorite game is **Hitchhiker's Guide to the Galaxy** "for its frequently subtle or slapstick humor and sense of adventure." **Shad York**, 13, of Lancaster, Texas, likes **King's Quest** "because you have to really think about some

of the situations so that it's not too easy, and it helps me to think more creatively." And **Conrad Davis**, 15, of Austin, Texas, enjoys **Archon II** "because it combines strategy, skill, graphics, exciting game elements, sound, the thrill of victory, and the agony of defeat—all in one game."

A LETTER FROM A READER

Fellow hacker and poet extraordinaire, **Christa Starr**, welcomed the new SPECIAL Ks with this letter:

Dear New SPECIAL Ks,
Here is a poem about a fellow computer nut's plight. I call it "Tears on the Terminal."

*I'm crying at my terminal,
I am so sad and blue,
I had almost finished Zork,
When I was eaten by a Grue!*

*I'm crying at my terminal,
Because I know it's true
That after I've done Zork I,
I'm doomed to try Zork II!*

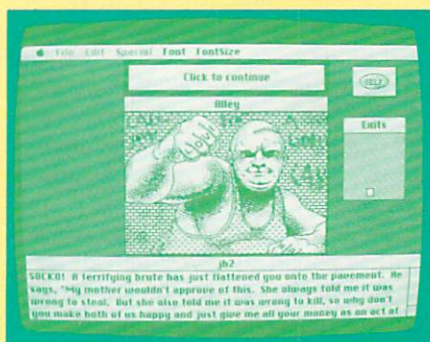
*I'm crying at my terminal,
Never will I be free,
For after I've conquered I and II,
Oh no!! Here comes Zork III!!!*

—CHRISTA STARR, 13, Lunenburg,
Massachusetts

P.S. Good luck at your new jobs!!!

DÉJÀ VU

Mindscape. Text/Graphic adventure. Your mission: You wake up in a men's room with a throbbing bump on the back of your head and you don't know who you are or how you got there. Overcome your bout of amnesia, figure out what happened, and most important, clear yourself of a murder charge. (*The hints and game are for the Amiga and Macintosh.*)



All sorts of creeps roam the streets.

- If you stop to look at the pictures in the hallway, you'll discover your best weapon.
- Try opening everything, including guns, desks, windows,

coats, and even people (dead or alive).

• As Ace Harding, you're guilty until proven innocent. Stay away from the police unless you're sure you can clear yourself.

• You'll want to hop in the Mercedes, but if you start the engine, it will only take you up.

• Stay off the streets as much as possible. The police, the mugger, and others are bound to find you if you're out in the open.

• Whenever you hear the siren, hide out until you think the coast is clear.

• Don't waste \$20 on an extra gun, but be sure to buy some bullets for a gun you already have.

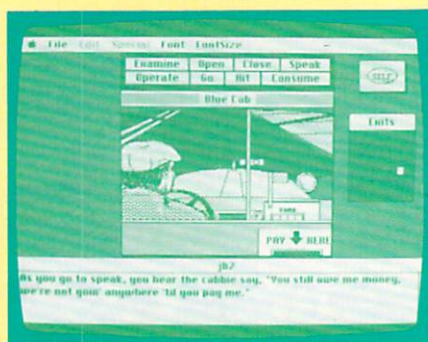
• Take a cab ride to every address you find.

• There's only one person you have to kill. You may get a warning about him before you see him.

• A pencil will make disappearing words reappear.

• Make sure your inventory has a large supply of truth serum. You'll want to make people talk.

• Be ready to hit people, elevator buttons, and doorknobs.



There's no such thing as a free ride.

• You can count on your cab driver as long as you pay your fares.

• No, you're not in Las Vegas, but you'll have to gamble for cab rides.

• You can get your memory back if you get to Dr. Brody's on time.

• The sewer is a good place to dump items that a jury could hold against you.

• No jury will believe you unless you have solid evidence. Don't go to the police without a diary or an itinerary.

BREAKERS

Synapse/Broderbund. Text adventure. Your mission: Escape from the space colony orbiting your home planet of Borg, break up the band of evil space pirates that capture and enslave your people, and collect the four elements that will save your world from destruction. It won't be easy, especially for a little, bald, golden Lau like yourself, but it's either succeed or end up as dinner for some Cirdonian or a basketball for a Gak. (*The hints and game are for the Apple II series and Commodore 64/128.*)

- Betty can help you, if you are polite, inquisitive, and persistent.
- Take time to answer Beek's riddles. They could save bloodshed later.
- When Gaks pay a visit to Rigg's apartment, hang out with the hangers.

• Spending time with Bobo could be worth your while.

• A tired driver will believe just about anything you say.

• Take a crash course in driving at Gak headquarters.

• A desperate prisoner may throw in the towel—or throw something else.

• Nate Grey appreciates people with a positive attitude.

• Your Buddy just isn't the same without a cup of coffee.

• As far as Borg is concerned, you mean business, and you should let Casey Jones know that. Insist that he takes you home.

• Bobo can turn up in the most surprising places. If you help her, she might lend you a hand.

• Kobbies can be helpful, but they are a little hard of hearing.

• A box is no place for a Lau to stay longer than necessary.

• Plant the idea in the Mucker's head that it should not eat you.

• The keg can be used to get up in the world; so can the belt of a hapless adventurer.

• White lies can have just the right effect on Mulcahy, but don't lie about the medallion.

• The creature in the cranny will take you on a strange journey if you relax and make yourself a drink.

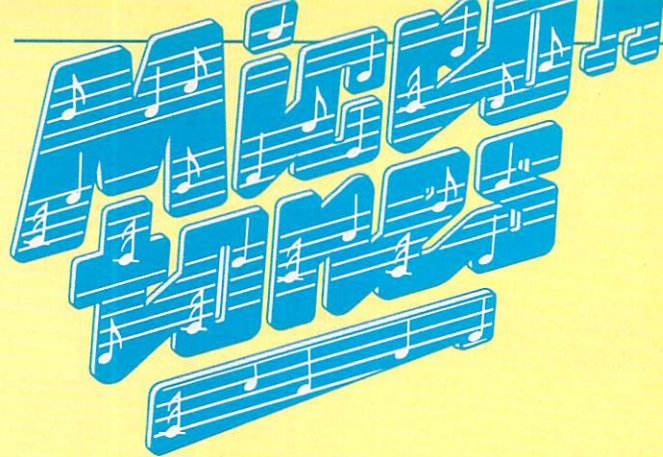
• Be daring: Lau can survive in very inhospitable environments.

• The sleeping breaker has your key to success.

• In the amphitheater, you may encounter an old friend.

• Use gathered elements to complete the heavens.

—THE SPECIAL Ks



MUSIC PROGRAMS BY JOEY LATIMER

ON TOP OF SPAGHETTI

"Do you feel like having spaghetti tonight?" my wife called up to me from the bottom of the stairs. Little did she know that I had spent the entire day writing a program called *On Top of Spaghetti* for K-POWER. "Sorry, hon, I'm not hungry just yet," I replied hastily, although I was famished. She'll understand—and so will you—why I wasn't particularly hungry for spaghetti, when you type in this month's music program. SAVE it, and then RUN it. Excuse me while I sneeze ... AH CHOOO!



ADAM/ON TOP OF SPAGHETTI

```
10 LOMEM: 29000:DIM c(25),d(22),n1(22),n2(22),w$(25)
20 FOR x = 28000 TO 28005:READ m:POKE x,m:NEXT x
30 POKE 28006,159:CALL 28000
40 FOR x = 1 TO 22:READ n:n2(x) = INT(n/16)
50 n1(x) = n-n2(x)*16:READ d(x):NEXT x
60 FOR x = 1 TO 25:READ c(x),w$(x):NEXT x
70 TEXT:PRINT TAB(5);"- ON TOP OF SPAGHETTI -":PRINT
80 t1 = 1:t2 = 1:FOR y = 1 TO 6:PRINT
90 FOR x = 1 TO 22
100 IF c(t2) = t1 THEN PRINT TAB(2);w$(t2):t2 = t2+1
110 POKE 28006,144:CALL 28000
120 POKE 28006,128+n1(x):CALL 28000
130 POKE 28006,n2(x):CALL 28000
140 FOR de = 1 TO d(x)*200:NEXT de:t1 = t1+1
150 POKE 28006,159:CALL 28000:NEXT x,y
160 PRINT:PRINT "Press <Q> to quit"
170 PRINT "or any other key to play again.";
180 GET k$:IF k$ <> "Q" AND k$ <> "q" THEN 70
190 END
999 REM --MACHINE LANGUAGE DATA--
1000 DATA 58,102,109,211,255,201
9999 REM --TIMING AND TEXT DATA--
2000 DATA 859,1,859,1,682,1,574,1,430,4,511,6
2010 DATA 511,1,644,1,574,1,511,1,574,9
2020 DATA 574,1,859,1,682,1,574,1,574,4,766,6
```

```
2999 REM --TEXT AND TIMING DATA--
3000 DATA 1,ON TOP OF SPAGHETTI
3010 DATA 7,ALL COVERED WITH CHEESE
3020 DATA 12,I LOST MY POOR MEATBALL
3030 DATA 18,WHEN SOMEBODY SNEEZED.
3040 DATA 23,IT FELL OFF THE TABLE
3050 DATA 29,AND ONTO THE FLOOR
3060 DATA 34,AND THEN MY POOR MEATBALL
3070 DATA 40,ROLLED OUT OF THE DOOR.
3080 DATA 45,IT ROLLED IN THE GARDEN
3090 DATA 51,AND UNDER A BUSH
3100 DATA 56,AND THEN MY POOR MEATBALL
3110 DATA 62,WAS NOTHING BUT MUSH.
3120 DATA 67,THE MUSH WAS AS TASTY
3130 DATA 73,AS TASTY CAN BE
3140 DATA 78,AND EARLY NEXT SUMMER
3150 DATA 84,GREW INTO A TREE.
3160 DATA 89,THE TREE WAS ALL COVERED
3170 DATA 95,WITH BEAUTIFUL MOSS
3180 DATA 100,IT GREW LOVELY MEATBALLS
3190 DATA 106,AND TOMATO SAUCE.
3200 DATA 111,IF YOU EAT SPAGHETTI
3210 DATA 117,ALL COVERED WITH CHEESE
3220 DATA 122,HOLD ONTO YOUR MEATBALLS
3230 DATA 128,AND DON'T EVER SNEEZE!,0,0
```



APPLE II SERIES/ON TOP OF SPAGHETTI

```
10 DIM C(25),D(22),N(22),L$(25)
20 FOR X = 768 TO 796:READ ML:POKE X,ML:NEXT X
30 FOR X = 1 TO 22:READ N(X),D(X):NEXT X
40 FOR X = 1 TO 25:READ C(X),L$(X):NEXT X
50 HOME:PRINT TAB(8);"- ON TOP OF SPAGHETTI -":PRINT
60 T1 = 1:T2 = 1:FOR Y = 1 TO 6:PRINT
70 FOR X = 1 TO 22
80 IF C(T2) = T1 THEN PRINT TAB(2);L$(T2):T2 = T2+1
90 POKE 8,N(X):POKE 6,D(X)*28:CALL 768
100 FOR DE = 1 TO D(X)*5:NEXT DE:T1 = T1+1:NEXT X,Y
110 PRINT:PRINT "PRESS <Q> TO QUIT"
120 PRINT "OR ANY OTHER KEY TO PLAY AGAIN.";
130 GET K$:IF K$ <> "Q" THEN 50
140 END
999 REM --MACHINE-LANGUAGE DATA--
1000 DATA 165,8,74,133,10,164,8,173,48,192,136,234
1010 DATA 234,208,251,165,7,56,229,10,133,7,176,237
1020 DATA 198,6,208,233,96
9999 REM --NOTE DATA--
2000 DATA 162,1,162,1,128,1,108,1,81,4,96,6
2010 DATA 96,1,121,1,108,1,96,1,108,9
2020 DATA 108,1,162,1,128,1,108,1,108,4,144,6
2030 DATA 128,1,121,1,128,1,144,1,162,9
```

After you have typed in the above lines, add the DATA statements (lines 2999-3230) from the Adam version.



ATARI 400/800, 600/800XL, & 130XE/ ON TOP OF SPAGHETTI

```
10 DIM C(25),D(22),N(22),L$(625),T$(25)
20 OPEN #1,4,0,"K":L$=CHR$(32):L$(625)=L$:L$(2)=L$
30 FOR X=1 TO 22:READ A,B:N(X)=A:D(X)=B:NEXT X
40 FOR X=1 TO 25:READ A:C(X)=A:READ T$
50 L$(X*25-24)=T$:NEXT X:POKE 82,2:POKE 752,1
60 PRINT CHR$(125):POSITION 7,1
70 PRINT "- ON TOP OF SPAGHETTI -":PRINT
80 T1=1:T2=1:FOR Y=1 TO 6:PRINT
90 FOR X=1 TO 22:IF C(T2)<>T1 THEN 110
```



```

100 S=T2*25-24:PRINT L$(S,S+24):T2=T2+1
110 SOUND 0,N(X),10,8:FOR DE=1 TO D(X)*65:NEXT DE
120 SOUND 0,0,0:T1=T1+1:NEXT X:NEXT Y
130 PRINT :PRINT "PRESS <Q> TO QUIT"
140 PRINT "OR ANY OTHER KEY TO PLAY AGAIN.":
150 GET #1,K:IF K<>81 AND K<>113 THEN 60
160 POKE 752,0:END
1999 REM --NOTE DATA--
2000 DATA 162,1,162,1,128,1,108,1,81,3,96,5
2020 DATA 96,1,121,1,108,1,96,1,108,8
2040 DATA 108,1,162,1,128,1,108,1,108,3,144,5
2060 DATA 128,1,121,1,128,1,144,1,162,8

```

After you have typed in the above lines, add the DATA statements (lines 2999-3230) from the Adam version.



COMMODORE 64 & 128 (C 64 MODE)/ ON TOP OF SPAGHETTI

```

10 DIM C(25),D(22),H(22),L(22),S(25)
20 S=54272:FOR X=S TO S+23:POKE X,0:NEXT X
30 POKE 53281,0:POKE S+5,68:POKE S+6,132:POKE S+24,15
40 FOR X=1 TO 22:READ H(X),L(X),D(X):NEXT X
50 FOR X=1 TO 25:READ C(X),S(X):NEXT X
60 PRINT CHR$(147);TAB(7);"- ON TOP OF SPAGHETTI -"
70 PRINT:T1=1:T2=1:FOR Y=1 TO 6:PRINT
80 FOR X=1 TO 22
90 IF C(T2)=T1 THEN PRINT TAB(1);L$(T2):T2=T2+1
100 POKE S+4,33:POKE S+1,H(X):POKE S,L(X)
110 FOR DE=1 TO D(X)*135:NEXT DE
120 POKE S+4,32:T1=T1+1:NEXT X,Y
130 PRINT:PRINT "PRESS <Q> TO QUIT"
140 PRINT "OR ANY OTHER KEY TO PLAY AGAIN.":
150 GET K$:IF K$="" THEN 150
160 IF K$<>"Q" THEN 60
170 END
1999 REM --NOTE DATA--
2000 DATA 12,143,1,12,143,1,15,210,1,18,209,1,25,30
2010 DATA 3,21,31,5,21,31,1,16,195,1,18,209,1,21,31
2020 DATA 1,18,209,8,18,209,1,12,143,1,15,210,1,18
2030 DATA 209,1,18,209,3,14,24,5,15,210,1,16,195,1
2040 DATA 15,210,1,14,24,1,12,143,8

```

After you have typed in the above lines, add the DATA statements (lines 2999-3230) from the Adam version.



IBM PC & COMPATIBLES/ON TOP OF SPAGHETTI

This program has been tested and found to work on the following computers and hardware configurations using the BASICs shown: IBM PC w/Color/Graphics Monitor Adapter or Monochrome/Printer Card. w/Advanced BASIC A2.00. IBM PCjr w/ Cartridge BASIC J1.00. Tandy 1000 w/GW-BASIC 2.02 version 01.01.00. It should also work on many other PC compatibles.

```

10 DIM C(25),D(22),N(22),L$(25):KEY OFF
20 FOR X=1 TO 22:READ N(X),D(X):NEXT X
30 FOR X=1 TO 25:READ C(X),L$(X):NEXT X
40 CLS:PRINT TAB(8);"- ON TOP OF SPAGHETTI -":PRINT
50 T1=1:T2=1:PLAY "MF"
60 FOR Y=1 TO 6:PRINT:FOR X=1 TO 22
70 IF C(T2)=T1 THEN PRINT TAB(2);L$(T2):T2=T2+1
80 SOUND N(X),D(X)*3:SOUND 32767,.1
90 T1=T1+1:NEXT X,Y
100 PRINT:PRINT "Press <Q> to quit"
110 PRINT "or any other key to play again."
120 K$=INKEY$:IF K$="" THEN 120
130 IF K$<>"Q" AND K$<>"q" THEN 40 ELSE KEY OFF:END
1999 REM --NOTE DATA--
2000 DATA 392,1,392,1,494,1,587,1,784,3,659,5

```

```

2010 DATA 659,1,523,1,587,1,659,1,587,8
2020 DATA 587,1,392,1,494,1,587,1,587,3,440,5
2030 DATA 494,1,523,1,494,1,440,1,392,8

```

After you have typed in the above lines, add the DATA statements (lines 2999-3230) from the Adam version.



TANDY COLOR COMPUTER/ON TOP OF SPAGHETTI

```

10 DIM C(25),D(22),N(22),L$(25)
20 FOR X=1 TO 22:READ N(X),D(X):NEXT X
30 FOR X=1 TO 25:READ C(X),L$(X):NEXT X
40 CLS:PRINT TAB(4);"- ON TOP OF SPAGHETTI -"
50 T1=1:T2=1
60 FOR Y=1 TO 6:PRINT:FOR X=1 TO 22
70 IF C(T2)=T1 THEN PRINT TAB(2);L$(T2):T2=T2+1
80 SOUND N(X),D(X)*4:T1=T1+1:NEXT X,Y
90 PRINT:PRINT "PRESS <Q> TO QUIT"
100 PRINT "OR ANY OTHER KEY TO PLAY AGAIN.":
110 K$=INKEY$:IF K$="" THEN 110
120 IF K$<>"Q" THEN 40 ELSE END
1999 REM --NOTE DATA--
2000 DATA 32,1,32,1,78,1,108,1,147,3,125,5
2010 DATA 125,1,89,1,108,1,125,1,108,8
2020 DATA 108,1,32,1,78,1,108,1,108,3,58,5
2030 DATA 78,1,89,1,78,1,58,1,32,8

```

After you have typed in the above lines, add the DATA statements (lines 2999-3230) from the Adam version.



TI-99/4A/ON TOP OF SPAGHETTI

```

10 DIM C(25),D(22),N(22),L$(25)
20 FOR X=1 TO 22
30 READ N(X),D(X)
40 NEXT X
50 FOR X=1 TO 25
60 READ C(X),L$(X)
70 NEXT X
80 CALL CLEAR
90 PRINT TAB(2);"- ON TOP OF SPAGHETTI -"
100 T1=1
110 T2=1
120 FOR Y=1 TO 6
130 PRINT
140 FOR X=1 TO 22
150 IF C(T2)<>T1 THEN 180
160 PRINT TAB(2);L$(T2)
170 T2=T2+1
180 CALL SOUND(D(X)*220,N(X),0)
190 T1=T1+1
200 NEXT X
210 NEXT Y
220 PRINT
230 PRINT "PRESS <Q> TO QUIT OR"
240 PRINT "ANY OTHER KEY TO PLAY AGAIN.":
250 CALL KEY(3,K,ST)
260 IF ST=0 THEN 250
270 IF K<>81 THEN 80
280 END
1999 REM --NOTE DATA--
2000 DATA 392,1,392,1,494,1,587,1,784,3,659,5
2010 DATA 659,1,523,1,587,1,659,1,587,8
2020 DATA 587,1,392,1,494,1,587,1,587,3,440,5
2030 DATA 494,1,523,1,494,1,440,1,392,8

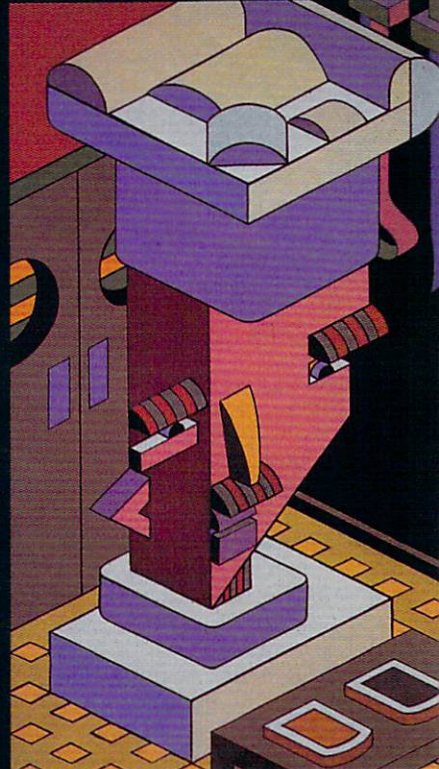
```

After you have typed in the above lines, add the DATA statements (lines 2999-3230) from the Adam version.

the Programmer



ILLUSTRATION BY BARTON STABLER



M A Y

GRAPHICS PROGRAM

Page 62

Change a funny face to a frightened one with *Face Cartoon*, a graphics program that lets you design your own animated sequence of facial expressions.

PRODUCTIVITY PROGRAM

Page 66

Organize the addresses and phone numbers of your friends, family members, or business contacts with our *Micro Phonebook* data-base program.

TIPS TO THE TYPIST

Page 74

How to type in *FAMILY COMPUTING's* programs, and what to do if a program doesn't work.

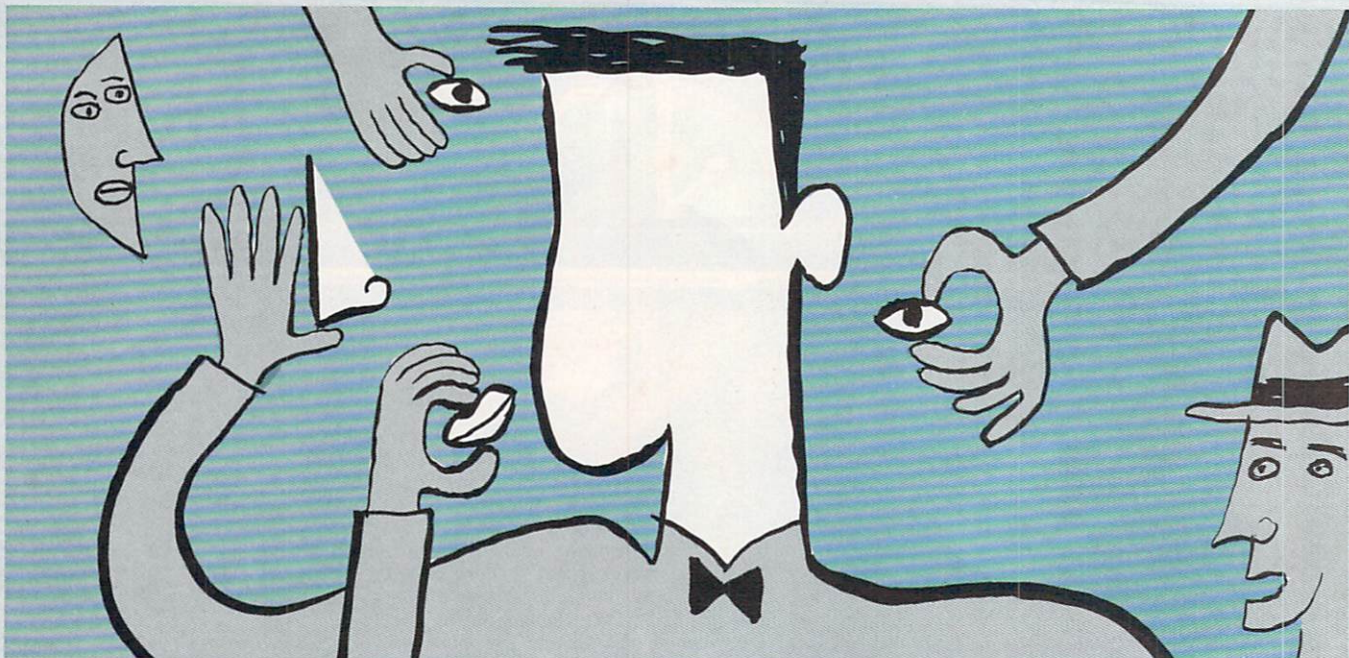
MORE PROGRAMS IN K-POWER

Page 57

Please don't sneeze when you run *On Top of Spaghetti* in Microtones.

FACE CARTOON

BY JOEY LATIMER



Have you ever thought about how easy it is to tell how someone feels from his or her facial expressions? A frown, a smile, or a mean look can communicate an inner feeling.

Face Cartoon is a program that draws a face on the screen and then lets you make different facial "cartoons" by pressing keys that change parts of the face.

For example, the "1" key lets you select among four types of eyebrows. Pressing the "2" key changes the eyes so that they look left, right, straight ahead, or appear closed. The "3" key lets you choose among four different mouths. On Atari, C 64, IBM PCjr and compatible, and VIC-20 computers, the *Face Cartoon* program lets you use the "4" key to change the color of the face.

By altering these facial features, it is possible, for example, to make your cartoon face shift its eyes nervously, raise its eyebrows in surprise, and open and close its mouth to simulate conversation. The expressions can be linked together to create an animated sequence.

To design an original cartoon or animated sequence, you simply record a series of facial expressions and then play them back. To record, you first press the numbered keys until you create the facial expression you desire, and then press the "R" key to record the current face. Each time you press "R," it's like taking a snapshot of the screen.

These "snapshots" are stored in sequential order and make up a cartoon, which can be played back at any time by pressing the "P" key. The "C" key clears memory of any recorded cartoons and returns the face to its original appearance. Press "C" before you record, unless you want to add on to a previously recorded cartoon.

If you want to see all of the expressions possible with *Face Cartoon*, press the "A" key, which will cause a randomly generated cartoon of facial expressions to play automatically. Pressing any key stops the random cartoon from playing. Pressing the "H" key halts the program and returns you to BASIC.

Apple II series/Face Cartoon

```

10 DIM BR(4,3,5),MO(4,11,4),MT(4)
20 DIM B%(1000),BG%(1000),E%(1000),M%(1000)
30 GR:HOME:PRINT:GS = CHR$(7)
40 FOR X = 1 TO 4:FOR Y = 1 TO 3:FOR Z = 1 TO 5
50 READ BR(X,Y,Z):NEXT Z,Y,X
60 FOR X = 1 TO 4:READ MT(X):NEXT X
70 FOR X = 1 TO 4:FOR Y = 1 TO MT(X):FOR Z = 1 TO 4
80 READ MO(X,Y,Z):NEXT Z,Y,X
90 FOR RO = 0 TO 27:READ T:FOR X = 1 TO T
100 READ KO,L,R:COLOR= KO:IF KO = 1 THEN COLOR= 13
110 HLINE L,R AT RO:HLIN 39-R,39-L AT RO
120 NEXT X,RO:COLOR= 6:FOR RO = 28 TO 39
130 HLINE 0,39 AT RO:NEXT RO
140 COLOR= 0:VLINE 33,39 AT 6:VLINE 33,39 AT 33
150 PRINT "1 - 3 A)UTO C)LEAR H)ALT P)LAY R)ECORD";
160 LB = 0:R = 0:GOSUB 1000:POKE -16368,0
170 K = PEEK(-16384)-128:IF K < 0 THEN 170
180 K = K-(K > 96)*(K < 123)*32
190 POKE -16368,0:IF K = 72 THEN TEXT:HOME:END
200 ON (K <> 65) GOTO 240:POKE -16368,0
210 IF PEEK(-16384) < 128 THEN 230
220 GOSUB 1000:POKE -16368,0:GOTO 170
230 K = INT(RND(1)*3)+1:GOSUB 6000:GOTO 210
240 IF K <> 82 THEN 280
250 IF R = 1000 THEN PRINT GS;:GOTO 170
260 R = R+1:B%(R) = B:E%(R) = E
270 M%(R) = M:BG%(R) = BG:GOTO 170
280 IF K <> 67 AND K <> 80 THEN 330
290 GOSUB 1000:IF K = 67 THEN R = 0:GOTO 170
300 IF R = 0 THEN PRINT GS;:GOTO 170
310 FOR Q = 1 TO R:B = B%(Q):E = E%(Q):M = M%(Q)
320 BG = BG%(Q):GOSUB 2000:NEXT Q:GOTO 170
330 K = K-48:IF K < 1 OR K > 3 THEN 170
340 GOSUB 6000:GOTO 170
1000 B = 1:E = 12:M = 1:BG = 7:GOSUB 2000:RETURN
2000 GOSUB 3000:GOSUB 4000:GOSUB 5000:RETURN
3000 IF B = LB THEN RETURN
3010 COLOR= 13:FOR X = 2 TO 4:HLIN 10,14 AT X
3020 HLINE 25,29 AT X:NEXT X:B1 = B:B2 = B
3030 IF B = 3 THEN B1 = 2:B2 = 3:GOTO 3050
3040 IF B = 2 THEN B1 = 3:B2 = 2
3050 COLOR= 8:FOR Y = 1 TO 3:FOR X = 1 TO 5

```


GRAPHICS PROGRAM

```

200 PRINT SPC(1);CHR$(144);"1 - 4 AUTO C)LEAR H)ALT P
)LAY R)ECORD";
210 PM=-1:R=0:POKE BD,12:GOSUB 1000
220 GET K$:IF K$="" THEN 220
230 IF K$<>"H" THEN 260
240 POKE BD,14:POKE 53281,6
250 PRINT CHR$(147);CHR$(142);CHR$(154):END
260 ON -(K$<>"A") GOTO 300:PM=0
270 GET K$:IF K$<>"H" THEN PM=-1:GOSUB 1000:GOTO 220
280 K=INT(RND(1)*4)+1:GOSUB 7000
290 FOR DE=1 TO 50:NEXT DE:GOTO 270
300 IF K$<>"R" THEN 330
310 IF R=1000 THEN POKE BD,2:GOTO 220
320 R=R+1:B(R)=B:E(R)=E:M(R)=M:BG(R)=BG:GOTO 220
330 IF K$<>"C" AND K$<>"P" THEN 390
340 GOSUB 1000
350 IF K$="C" THEN POKE BD,14:R=0:POKE BD,12:GOTO 220
360 IF R=0 THEN 220
370 POKE BD,14:FOR Q=1 TO R:B=B(Q):E=E(Q):M=M(Q)
380 BG=BG(Q):GOSUB 2000:NEXT Q:POKE BD,12:GOTO 220
390 K=VAL(K$):IF K<1 OR K>4 THEN 220
400 GOSUB 7000:GOTO 220
1000 B=1:E=1:M=1:BG=7:GOSUB 2000:RETURN
2000 GOSUB 3000:GOSUB 4000:GOSUB 5000
2010 GOSUB 6000:RETURN
3000 B1=B:B2=B:IF B=3 THEN B1=2:B2=3:GOTO 3020
3010 IF B=2 THEN B1=3:B2=2
3020 FOR X=1 TO 3
3030 POKE 214,X:PRINT:PRINT TAB(10);BR$(B1,X);
3040 POKE 214,X:PRINT:POKE 211,25:PRINT BR$(B2,X);
3050 NEXT X:RETURN
4000 POKE 214,6:PRINT:PRINT TAB(11);EY$(E);
4010 POKE 214,6:PRINT:POKE 211,26:PRINT EY$(E);:RETURN
5000 FOR X=1 TO 3:POKE 214,X+13:PRINT
5010 PRINT TAB(14);MO$(M,X);:NEXT X:RETURN
6000 POKE 53281,BG:RETURN
7000 ON K GOTO 7010,7020,7030,7040
7010 B=B+1:B=B+(B=5)*4:GOSUB 3000:RETURN
7020 E=E+1:E=E+(E=5)*4:GOSUB 4000:RETURN
7030 M=M+1:M=M+(M=5)*4:GOSUB 5000:RETURN
7040 BG=BG+1:IF PM THEN BG=BG+(BG=16)*16:GOTO 7070
7050 BG=BG-(BG=6)-(BG=8)-(BG=10)-(BG=14)
7060 BG=BG+(BG=16)*15
7070 GOSUB 6000:RETURN
8000 DATA 5,2,2,2,2,2,5,2,2,2,2,2,7,18,129,2,2,2,2,2
8010 DATA 8,2,2,18,129,2,146,2,2,8,2,18,129,2,146,2,2
8020 DATA 2,8,18,129,2,146,2,2,2,8,2,18,129,2,146
8030 DATA 2,8,2,2,2,18,129,2,146,2,7,2,2,2,18,129
8040 DATA 2,5,2,2,2,2,8,2,18,129,2,2,146,2,10,18
8050 DATA 129,2,146,2,2,18,129,2,154,60,111,62,154
8060 DATA 111,62,32,154,60,111,154,45,45,45,3,18,1
8070 DATA 150,1,32,12,8,2,1,18,1,150,1,2,1,5,1,2,8
8080 DATA 150,1,2,1,6,2,2,18,1,150,1,2,8,146,1,2,2,6
8090 DATA 2,1,18,1,150,1,2,10,146,1,2,1,6,2,3,18,1
8100 DATA 150,1,2,6,146,1,2,3,1,2,12,6,2,4,18,1,150,1
8110 DATA 2,4,146,1,2,4,11,2,3,18,1,150,1,2,1,146,1,2
8120 DATA 4,18,1,150,1,2,1,146,1,2,3,6,2,4,18,1,150,1
8130 DATA 2,4,146,1,2,4,6,2,2,18,1,150,1,2,8,146,1,2
8140 DATA 2,8,2,1,18,1,150,1,2,1,5,1,2,8,150,1,2,1,3
8150 DATA 18,1,150,1,2,12,2,0,2,8,0,9,2,0,0,3,10,0,6
8160 DATA 2,0,0,3,8,0,5,2,0,0,4,8,0,4,3,0,0,3,10,0,1
8170 DATA 8,0,3,7,0,0,2,10,0,1,1,32,2,8,0,2,0,0,9,1
8180 DATA 32,3,0,0,1,13,0,0,2,10,0,1,1,32,1,10,0,1,1
8190 DATA 32,1,8,0,1,1,32,1,0,0,1,1,32,7,0,0,1,1,32,1
8200 DATA 0,0,1,10,0,1,9,0,0,2,10,0,1,1,32,1,10,0,1,1
8210 DATA 32,3,0,0,1,1,32,7,0,0,2,10,0,1,1,32,5,0,0,1,1
8220 DATA 0,1,1,32,1,10,0,1,1,32,2,0,0,1,1,32,7,0,0,1,1
8230 DATA 1,32,1,10,0,2,8,0,0,3,10,0,1,1,32,5,0,0,1,1
8240 DATA 32,5,0,0,1,1,32,2,10,0,2,8,0,0,3,10,0,1,1
8250 DATA 32,1,10,0,1,1,32,4,0,0,5,1,32,2,10,0,3,4,0
8260 DATA 0,4,10,0,2,1,32,11,10,0,3,4,0,0,4,10,0,1,1
8270 DATA 32,11,8,233,4,3,0,0,5,1,32,9,8,233,6,1,0,0
8280 DATA 6,1,0,0,7,1,0,0,7,1,0,0,8,1,0,0,8,1,0,0,9,1
8290 DATA 0,0,9,1,6,0,11,1,6,0,11,1,6,0,20,1,6,0,1

```

IBM PC & compatibles w/Color/Graphics Monitor Adapter/Face Cartoon

This program has been tested and found to work on the following computers and hardware configurations using the BASICs shown: IBM PC w/Color/Graphics Monitor Adapter, w/Disk BASIC D2.00 or Advanced BASIC A2.00. It should also work on many other PC compatibles.

```

10 DEFINT A-Z:DIM BR$(4,3),EY$(4),MO$(4,3)
20 DIM B(1000),E(1000),M(1000)
30 WIDTH 40:LOCATE ,0:KEY OFF:COLOR 14,0,0:CLS
40 FOR W=1 TO 4:FOR X=1 TO 3:AS=""
50 FOR Y=1 TO 5:READ B:IF B=2 THEN B=32
60 AS=AS+CHR$(B):NEXT Y:BR$(W,X)=AS:NEXT X,W
70 FOR W=1 TO 4:AS=CHR$(32)
80 FOR Y=2 TO 4:READ B:AS=AS+CHR$(B):NEXT Y
90 EY$(W)=AS+CHR$(32):NEXT W
100 FOR W=1 TO 4:FOR X=1 TO 3:AS="":READ T
110 FOR Y=1 TO T:READ B,U
120 FOR Z=1 TO U:AS=AS+CHR$(B):NEXT Z,Y
130 MO$(W,X)=AS:NEXT X,W
140 FOR RO=1 TO 23:S=1:READ T
150 FOR X=1 TO T:READ KO,N
160 IF (RO=13 OR RO=14) AND X=3 THEN CH=178 ELSE CH=21
9
170 FOR CO=S TO S+N-1:COLOR KO
180 LOCATE RO,CO:PRINT CHR$(CH);
190 LOCATE RO,41-CO:PRINT CHR$(CH);:NEXT CO
200 S=S+N:NEXT X,RO:COLOR 14:LOCATE 25,2
210 PRINT "1 - 3 AUTO C)LEAR H)ALT P)LAY R)ECORD";
220 KMAX=3:R=0:GOSUB 1000
230 K$=INKEY$:IF K$="" THEN 230
240 V=ASC(K$):K$=CHR$(V-(V>96)*(V<123)*32)
250 IF K$="H" THEN COLOR 14,0,0:CLS:END
260 IF K$<>"A" THEN 300
270 K$=INKEY$:IF K$<>"H" THEN GOSUB 1000:GOTO 230
280 K=INT(RND(1)*4)+1:GOSUB 7000
290 FOR DE=1 TO 40:NEXT DE:GOTO 270
300 IF K$<>"R" THEN 330
310 IF R=1000 THEN COLOR 0,SC,4:GOTO 230
320 R=R+1:B(R)=B:E(R)=E:M(R)=M:GOTO 230
330 IF K$<>"C" AND K$<>"P" THEN 390
340 GOSUB 1000
350 IF K$="C" THEN COLOR 0,SC,0:R=0:GOTO 230
360 IF R=0 THEN SOUND 400,2:GOTO 230
370 COLOR 0,SC,9:FOR Q=1 TO R:B=B(Q):E=E(Q):M=M(Q)
380 GOSUB 2000:NEXT Q:COLOR 0,SC,0:GOTO 230
390 K=VAL(K$):IF K<1 OR K>KMAX THEN 230
400 GOSUB 7000:GOTO 230
1000 B=1:E=1:M=1:SC=7:GOSUB 2000:RETURN
2000 GOSUB 3000:GOSUB 4000:GOSUB 5000
2010 RETURN
3000 B1=B:B2=B:IF B=3 THEN B1=2:B2=3:GOTO 3020
3010 IF B=2 THEN B1=3:B2=2
3020 FOR X=1 TO 3
3030 COLOR 6,7:LOCATE X+2,11:PRINT BR$(B1,X);
3040 LOCATE X+2,26:PRINT BR$(B2,X);
3050 NEXT X:RETURN
4000 LOCATE 8,11:COLOR 1,7:PRINT EY$(E);
4010 LOCATE 8,26:PRINT EY$(E);:RETURN
5000 FOR X=1 TO 3:COLOR 12,7:LOCATE X+15,15
5010 PRINT MO$(M,X);:NEXT X:RETURN
7000 ON K GOTO 7010,7020,7030
7010 B=B+1:B=B+(B=5)*4:GOSUB 3000:RETURN
7020 E=E+1:E=E+(E=5)*4:GOSUB 4000:RETURN
7030 M=M+1:M=M+(M=5)*4:GOSUB 5000:RETURN
8000 DATA 2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2
8010 DATA 2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2
8020 DATA 2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2
8030 DATA 2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2
8040 DATA 2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2
8050 DATA 2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2
8060 DATA 2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2
8070 DATA 2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2
8080 DATA 2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2
8090 DATA 2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2

```



```

8100 DATA 7,11,3,0,3,6,5,7,12,3,0,4,6,4,7,13,4,0,3,12
8110 DATA 1,6,3,7,13,7,0,2,12,1,7,2,6,2,0,9,7,3,0,1
8120 DATA 13,0,2,12,1,7,1,12,1,7,1,6,1,7,1,0,1,7,7,0
8130 DATA 1,7,1,0,1,12,1,9,0,2,12,1,7,1,12,1,7,3,0,1
8140 DATA 7,7,0,2,12,2,10,0,3,12,1,7,1,12,1,7,2,0,1,7
8150 DATA 7,0,1,7,1,12,2,8,0,3,12,1,7,5,0,1,7,5,0,1,7
8160 DATA 2,12,2,8,0,3,12,1,7,1,12,1,7,4,0,5,7,2,12,3
8170 DATA 4,0,4,12,2,7,11,12,3,3,0,5,7,11,6,4,3,0,6,7
8180 DATA 9,6,5,2,0,7,13,2,0,8,7,12,2,0,8,7,12,2,0
8190 DATA 9,7,11,2,0,9,7,11,2,0,10,7,10,2,0,11,7,9,2
8200 DATA 0,12,7,8,2,0,13,7,7

```

MODIFICATION FOR ANOTHER COMPUTER IBM PCjr & compatibles/Face Cartoon

This program has been tested and found to work on the following computers and hardware configurations using the BASICs shown: IBM PCjr w/Cartridge BASIC J1.00. Tandy 1000 w/GW-BASIC 2.02 version 01.01.00.

Use the IBM PC version, with the following alterations:
Add lines 6000 and 7040-7060.

```

6000 PALETTE 7,SC:RETURN
7040 SC=SC+1:IF PM THEN SC=SC+(SC=16)*16:GOTO 7060
7050 SC=SC-(SC=1)-(SC=6)-(SC=12):SC=SC+(SC=16)*15
7060 GOSUB 6000:RETURN

```

Also, change lines 20, 210, 220, 260, 270, 320, 380, 2010, and 7000 to read as follows:

```

20 DIM B(1000),BG(1000),E(1000),M(1000)
210 PRINT "1 - 3 A)uto C)lear H)alt P)lay R)ecord"

```

Correct!
VIC
20
version

```

160 FOR X=1 TO 4:READ A,L:PRINTA,LEFT$(GL$,L);:NEXT X
170 FOR X=1 TO 16:READ A,CH:PRINTA,CHR$(CH);:NEXT X
180 PRINT$38,STRING$(12,188);
190 PRINT$97,"1 - 3 A)uto C)lear H)alt P)lay R)ecord"
;
200 R=0:GOSUB 1000
210 K$=INKEY$:IF K$="" THEN 210
220 V=ASC(K$):K$=CHR$(V-(V>96)*(V<123)*32)
230 IF K$="H" THEN CLS:END
240 IF K$<>"A" THEN 280
250 K$=INKEY$:IF K$<>"H" THEN GOSUB 1000:GOTO 210
260 K=RND(4):GOSUB 6000
270 FOR DE=1 TO 40:NEXT DE:GOTO 250
280 IF K$<>"R" THEN 310
290 IF R=1000 THEN 210
300 R=R+1:B(R)=B:E(R)=E:M(R)=M:GOTO 210

```

```

310 IF K$<>"C" AND K$<>"P" THEN 360
320 GOSUB 1000:IF K$="C" THEN R=0:GOTO 210
330 IF R=0 THEN 210
340 FOR Q=1 TO R:B=B(Q):E=E(Q):M=M(Q)
350 GOSUB 2000:NEXT Q:GOTO 210
360 K=VAL(K$):IF K<1 OR K>3 THEN 210
370 GOSUB 6000:GOTO 210
1000 B=1:E=1:M=1:GOSUB 2000:RETURN
2000 GOSUB 3000:GOSUB 4000:GOSUB 5000:RETURN
3000 B1=B:B2=B:IF B=3 THEN B1=2:B2=3:GOTO 3020
3010 IF B=2 THEN B1=3:B2=2
3020 FOR X=1 TO 3:PRINT$21+64*X,BR$(B1,X);
3030 PRINT$38+64*X,BR$(B2,X);
3040 NEXT X:RETURN
4000 PRINT$342,EY$(E);
4010 PRINT$359,EY$(E);:RETURN
5000 FOR X=1 TO 3:PRINT$602+64*X,MO$(M,X);
5010 NEXT X:RETURN
6000 ON K GOTO 6010,6020,6030
6010 B=B+1:B=B+(B=5)*4:GOSUB 3000:RETURN
6020 E=E+1:E=E+(E=5)*4:GOSUB 4000:RETURN
6030 M=M+1:M=M+(M=5)*4:GOSUB 5000:RETURN
7000 DATA 2,2,2,2,2,2,2,2,191,191,191,191,191,2,2
7010 DATA 191,2,2,2,191,2,2,2,191,2,2,2,2,2,191,2,2
7020 DATA 2,2,2,191,2,2,2,2,191,2,2,2,2,2,191,191
7030 DATA 191,2,191,2,2,2,191,60,79,62,79,62,32,32,60
7040 DATA 79,45,45,45,1,191,12,5,32,1,191,1,32,8,191
7050 DATA 1,32,1,3,32,2,191,8,32,2,3,32,1,191,10,32,1
7060 DATA 3,32,2,191,8,32,2,1,32,12,3,32,4,191,4,32,4
7070 DATA 5,32,3,191,1,32,4,191,1,32,3,3,32,4,191,4
7080 DATA 32,4,3,32,2,191,8,32,2,5,32,1,191,1,32,8
7090 DATA 191,1,32,1,1,191,12,15,48,78,113,141,178
7100 DATA 201,202,204,243,245,246,264,267,308,311,328
7110 DATA 331,337,348,351,352,355,366,372,375,392,395
7120 DATA 414,415,416,417,436,439,457,458,459,477,478
7130 DATA 479,480,481,482,500,501,502,524,563,589,626
7140 DATA 654,689,719,752,784,815,850,877,916,939,268
7150 DATA 16,292,16,402,10,420,10,273,188,401,131,284
7160 DATA 176,412,131,349,131,350,131,287,176,288,176
7170 DATA 353,131,354,131,291,176,419,131,302,188,430
7180 DATA 131,537,176,550,176

```

VIC-20 w/8K or 16K RAM Cartridge/Face Cartoon

```

10 DIM BR$(4,3),EY$(4),MO$(4,3)
20 DIM B(1000),BG(1000),E(1000),M(1000)
30 SB=4096:CB=37888:PRINT CHR$(147);CHR$(14)
40 FOR W=1 TO 4:FOR X=1 TO 3:AS$="":READ T
50 FOR Y=1 TO T:READ B:IF B=2 THEN B=32
60 AS$=AS$+CHR$(B):NEXT Y:BR$(W,X)=AS$:NEXT X,W
70 FOR W=1 TO 4:AS$="":FOR Y=1 TO 4
80 READ B:AS$=AS$+CHR$(B):NEXT Y
90 EY$(W)=AS$:NEXT W
100 FOR W=1 TO 4:FOR X=1 TO 3:AS$="":READ T
110 FOR Y=1 TO T:READ B,U:IF B=2 THEN B=32
120 FOR Z=1 TO U:AS$=AS$+CHR$(B):NEXT Z,Y
130 MO$(W,X)=AS$:NEXT X,W
140 FOR R=5 TO 22:S=0:READ T
150 FOR X=1 TO T:READ KO,CH,N:IF CH=0 THEN CH=160
160 FOR CO=S TO S+N-1:Y=CO+22*RO:Z=(21-CO)+22*RO
170 POKE SB+Y,CH:POKE CB+Y,KO
180 POKE SB+Z,CH+(CH=105)*10:POKE CB+Z,KO
190 NEXT CO:S=S+N:NEXT X,RO:POKE 214,21:PRINT
200 PRINT TAB(5);"1 - 4 A C H P R";
210 PM=0:R=0:GOSUB 1000
220 GET K$:IF K$="" THEN 220
230 IF K$<>"H" THEN 260
240 POKE 36879,27
250 PRINT CHR$(147):END
260 ON -(K$<>"A") GOTO 300:PM=-1
270 GET K$:IF K$<>"H" THEN PM=-1:GOSUB 1000:GOTO 220
280 K=INT(RND(1)*4)+1:GOSUB 7000
290 FOR DE=1 TO 60:NEXT DE:GOTO 270

```


GRAPHICS PROGRAM

```

300 IF K<>"R" THEN 330
310 IF R=100 THEN POKE 36879,BG+2:GOTO 220
320 R=R+1:B(R)=B:E(R)=E:M(R)=M:BG(R)=BG:GOTO 220
330 IF K<>"C" AND K<>"P" THEN 400
340 GOSUB 1000
350 IF K="C" THEN POKE 36879,BG+7:R=0:GOTO 220
360 IF R=0 THEN 220
370 POKE 36879,BG+6:FOR Q=1 TO R:B=B(Q):E=E(Q):M=M(Q)
380 BG=BG(Q):GOSUB 2000:NEXT Q
390 POKE 36879,BG+7:GOTO 220
400 K=VAL(K$):IF K<1 OR K>4 THEN 220
410 GOSUB 7000:GOTO 220
1000 B=1:E=1:M=1:BG=248:GOSUB 2000:RETURN
2000 GOSUB 3000:GOSUB 4000:GOSUB 5000
2010 GOSUB 6000:RETURN
3000 FOR X=1 TO 3:B1=B:B2=B
3010 IF B=3 THEN B1=2:B2=3:GOTO 3030
3020 IF B=2 THEN B1=3:B2=2
3030 POKE 214,X-1:PRINT:PRINT TAB(2);BR$(B1,X);
3040 POKE 214,X-1:PRINT:POKE 211,15:PRINT BR$(B2,X);
3050 NEXT X:RETURN
4000 POKE 214,6:PRINT:PRINT TAB(3);EY$(E);
4010 POKE 214,6:PRINT:POKE 211,16:PRINT EY$(E);:RETURN
5000 FOR X=1 TO 3:POKE 214,X+14:PRINT
5010 PRINT TAB(5);MO$(M,X);:NEXT X:RETURN
6000 POKE 36879,BG:RETURN
7000 ON K GOTO 7010,7020,7030,7040
7010 B=B+1:B=B+(B=5)*4:GOSUB 3000:RETURN
7020 E=E+1:E=E+(E=5)*4:GOSUB 4000:RETURN
7030 M=M+1:M=M+(M=5)*4:GOSUB 5000:RETURN
7040 BG=BG+16:IF PM THEN 7060
7050 BG=BG-16*(BG=40)-(BG=104)
7060 IF BG>248 THEN BG=8-(PM=0)*16
7070 GOSUB 6000:RETURN
8000 DATA 5,2,2,2,2,2,5,2,2,2,2,2,7,18,144,2,2,2,2,2
8010 DATA 8,2,2,18,144,2,146,2,2,8,2,18,144,2,146,2,2
8020 DATA 2,8,18,144,2,146,2,2,2,2,2,8,2,18,144,2,146
8030 DATA 2,2,8,2,2,2,18,144,2,146,2,2,2,2,2,18,144
8040 DATA 2,5,2,2,2,2,2,8,2,18,144,2,2,2,146,2,10,18
8050 DATA 144,2,146,2,2,2,18,144,2,31,60,111,62,31
8060 DATA 111,62,32,32,31,60,111,31,45,45,45,3,18,1
8070 DATA 28,1,32,12,8,2,1,18,1,28,1,2,1,5,1,2,8,28,1
8080 DATA 2,1,6,2,2,18,1,28,1,2,8,146,1,2,2,6,2,1,18
8090 DATA 1,28,1,2,10,146,1,2,1,6,2,3,18,1,28,1,2,6
8100 DATA 146,1,2,3,1,2,12,6,2,4,18,1,28,1,2,4,146,1
8110 DATA 2,4,11,2,3,18,1,28,1,2,1,146,1,2,4,18,1,28
8120 DATA 1,2,1,146,1,2,3,6,2,4,18,1,28,1,2,4,146,1,2
8130 DATA 4,6,2,2,18,1,28,1,2,8,146,1,2,2,8,2,1,18,1
8140 DATA 28,1,2,1,5,1,2,8,28,1,2,1,3,18,1,28,1,2,12
8150 DATA 3,0,0,8,1,32,2,0,0,1,4,0,0,1,1,32,7,0,0,2,2
8155 DATA 3,0,0,8,1,32,2,0,0,1,4,0,0,1,1,32,7,0,0,2,2
8160 DATA 0,1,5,0,0,1,1,32,7,0,0,1,1,32,1,2,0,1,5,0,0
8170 DATA 1,1,32,6,0,0,1,1,32,1,2,0,2,6,1,32,1,0,0,1
8180 DATA 1,32,4,0,0,1,1,32,2,2,0,2,4,1,32,2,0,0,4,1
8190 DATA 32,2,2,0,3,2,1,32,8,2,0,3,2,1,32,7,0,105,4
8200 DATA 2,1,32,6,0,105,5,1,1,32,0,1,1,32,0,1,1,32,0
8205 DATA 1,1,32,0,1,1,32,0,2,6,0,1,1,32,10,2,6,0,1,1
8210 DATA 1,1,32,0,1,1,32,0,2,6,0,1,1,32,10,2,6,0,1,1
8220 DATA 32,10,2,6,0,2,1,32,9,2,6,0,3,1,32,8

```

PRODUCTIVITY PROGRAM

MICRO PHONEBOOK: AN ADDRESS BOOK ON DISK

Use Our Program to Keep Neat and Organized Lists of Friends, Family, and Business Contacts

BY PASQUALE M. CIRULLO

Have you ever looked up someone's phone number in your address book and discovered several different numbers listed for the same person? That's what happened to me last weekend. I wanted to call a friend, but when I looked in my phone book, I had only his old numbers. After I finally tracked down his latest number, I decided to write *Micro Phonebook*.

Micro Phonebook is a program that will help you keep all of your addresses and phone numbers neat, orderly, and up to date. Some of my friends are constantly moving and changing addresses, so I had entire pages in my address book devoted to just one friend. But my *Micro Phonebook* doesn't keep old addresses and phone numbers that aren't needed anymore. It erases these entries and replaces them with the most current information. *Micro Phonebook* will also sort your address books any way that you want—for example, by first name, last name, state, or even area code.

Most address books will limit you to two or three pages for each letter of the alphabet. *Micro Phonebook* allows up to 120 entries per file, organized in any way you choose. You can even have entire files dedicated to specific letters.



USING MICRO PHONEBOOK

Micro Phonebook uses three menus for its commands: the Main Menu, the Rearrange Menu, and the Open or Close Menu. For all menus, type the number of your choice and then press RETURN or ENTER.

The Main Menu—the first menu you see whenever you run the program—lists the following:

1. START A NEW ADDRESS BOOK

This option lets you start a new address book for each member of your family or for each salesperson in your office. If you choose this option when you've been working with another address book, and you haven't saved your changes—the computer

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COMB COMB COMB COMB COMB COMB COMB COMB

will remind you to save the address book before continuing.

The computer will ask you for each person's last name, first name, company, address, city, state, and zip code, plus two telephone numbers. (The line that appears next to each prompt shows you the maximum length for that entry.) One of the address lines can be used to hold a title, such as Associate Manager. Any of these lines may be left blank, except for the last-name line. Leaving this line blank is the way you tell the computer that you're finished giving it names.

If you make a mistake, use the DELETE key (CONTROL-B on the Apple II or BACKSPACE on the IBM) to make your corrections, or you can make your corrections in Section 3 (see below).

2. ADD TO THIS ADDRESS BOOK

This selection will let you add names to an address book that was already started. This option is for inserting the name and address of a new friend or of a new contact at work. Do not use it when an address or telephone number that you've already typed in changes; that's the purpose of option number 3.

3. BROWSE THROUGH THIS ADDRESS BOOK

This is the main section of the program. When you choose number 3, the computer will show you the first entry in your address book and ask you to pick one of seven commands. These commands are Back, Forward, Delete, Search, Print, 0 - 9, or Exit.

Back. This will display the previous entry in the address book. If you are already at the first entry, the computer will display that entry again.

Forward. The computer will show you the next entry in your address book (if you're not at the end).

Delete. The command erases the name and address currently displayed on the screen from your address book. The computer will first ask whether you are sure you want to delete. If you say yes, the computer will erase the entry, and you will not be able to retrieve it.

Search. The computer will ask you the last name of the person you're looking for. You do not have to give the complete last name. For example, if you type in BRO (or just B) instead of BROWN, the computer will display the first name beginning with BRO (or B) that it finds.

Print. The computer will print the currently displayed entry on paper. Make sure that the printer is on-line and has paper.

0 - 9. If you type in a line number (e.g., 0 for last name or 6 for state), the computer will erase that line and let you enter new information on that line. Use this option to update phone numbers, addresses, names, etc.

Exit. The computer will return you to the main menu and ask for your next choice.

4. PRINT THIS ADDRESS BOOK

This option from the main menu will print your entire address book on paper. You can then fold it up and carry it with you or have it for quick reference when somebody else is using the computer.

5. REARRANGE THIS ADDRESS BOOK

Choosing this option brings you to the second of the three menus, the Rearrange Menu. This menu will let you sort the address book on any one of the 10 kinds of information: by first name, by last name, or even by zip code.

Just type in the line number (from 1 to 10). If you enter 11, you'll return to the main menu.

6. OPEN OR CLOSE AN ADDRESS BOOK

This option will bring you to the third of the three menus, the Open or Close Menu. This menu covers all the operations involved with your disk. There are five options on this menu:

See the names of your files.

This will give you a list of all the files on your disk. The computer will ask you which disk drive to look at. On the Apple, type D1 or D2; on the C 64, type 8 (for your first drive) or 9; and on PC compatibles, type A: or B:. (The Macintosh version will only list the files on the disk in the internal drive.)

Open an address book.

The computer will ask you for the name of the address book you want to use, and then load it into the computer's memory.

Close an address book.

The computer will ask you for a file name, and then

save the address book using that name. If you've made any changes, make sure you save before exiting the program or turning off the computer.

Erase a file. The computer will ask for the name of the file to erase and then ask you if you are sure you want to erase. If you answer yes, the computer will permanently erase that file from the disk. This option can be used to erase any file on your disk, not just address-book files.

Return to main menu. This option will take you back to the main menu, where you can continue with other operations.

7. QUIT

When you are finished with the program, the computer will first check whether you have saved the address book you were working with. If you did not, the computer will ask whether you want another chance to save it. Once you have done so or told the computer you don't want to save, the program will return you to BASIC.

Apple II series w/48K RAM, disk drive (printer optional), & DOS 3.3/Micro Phonebook

```
10 DIM C(10),L(10),M$(3,12),N(3),P$(120,11),R(10)
20 FOR X = 1 TO 10:READ R(X),C(X),L(X):NEXT X
30 FOR X = 1 TO 3:READ N(X):FOR Y = 1 TO N(X)
40 READ M$(X,Y):NEXT Y:NEXT X
50 B$ = "":FOR X = 1 TO 32:B$ = B$+CHR$(32):NEXT X
60 D$ = CHR$(4):G$ = CHR$(7):FL = 0:FS = "":NE = 0
70 S$ = "":FOR X = 1 TO 40:S$ = S$+CHR$(61):NEXT X
80 UL$ = "":FOR X = 1 TO 32:UL$ = UL$+CHR$(95):NEXT X
90 M = 1:FA = 0:GOSUB 4000
100 ON A GOTO 130,170,390,910,990,110,1270
110 M = 2:GOSUB 4000:ONERR GOTO 2000
120 ON A GOTO 1050,1090,1140,1190,90
130 IF FL = 0 THEN 170
140 GOSUB 5000:INPUT "":Z
150 ON Z GOTO 110,160:GOTO 140
160 NE = 0:FS = ""
170 GOSUB 3000:FL = 1:IF NE = 120 THEN 360
180 PRINT "PRESS <RETURN> AT THE END OF EACH"
190 PRINT "LINE. TO LEAVE A LINE BLANK, JUST"
200 PRINT "PRESS <ENTER>. LEAVE THE LAST NAME"
210 PRINT "LINE BLANK WHEN YOU HAVE NO MORE"
220 PRINT "NAMES TO ADD.":PRINT:PRINT
230 FOR X = 1 TO 10:VTAB 7+X:HTAB 1
240 PRINT M$(3,X):NEXT X
250 NE = NE+1:P$(NE,11) = ""
260 FOR X = 1 TO 10:VTAB 7+X:HTAB 14
270 PRINT LEFT$(B$,L(X)):NEXT X
280 FOR X = 1 TO 10:R = 7+X:C = 14
290 GOSUB 7000:P$(NE,X) = T$
300 IF P$(NE,1) = "" THEN NE = NE-1:X = 10:FA = 1
```



```

310 NEXT X:PRINT:IF FA = 1 THEN 90
320 WS = "":FOR Y = 1 TO LEN(PBS(NE,1))
330 P = ASC(MID$(PBS(NE,1),Y,1))
340 WS = WS+CHR$(P-32*(P > 96)*(P < 123))
350 NEXT Y:PBS(NE,11) = WS:IF NE < 120 THEN 250
360 PRINT "YOU HAVE REACHED THE LIMIT"
370 PRINT "SAVE IT TO DISK AND START ANOTHER."
380 GOSUB 6000:GOTO 90
390 GOSUB 3000:SF = 1:IF NE <> 0 THEN 420
400 PRINT "THERE IS NO ADDRESS BOOK TO BROWSE"
410 PRINT "THROUGH.":GOSUB 6000:GOTO 90
420 GOSUB 3000:FL = 1
430 VTAB 2:HTAB 12:PRINT "MICRO PHONEBOOK"
440 FOR X = 1 TO 10:VTAB RO(X):HTAB CO(X)-3
450 PRINT STR$(X-1);": ";NEXT X
460 FOR X = 1 TO 10:VTAB RO(X):HTAB CO(X)
470 PRINT LEFT$(BL$(X),L(X));:VTAB RO(X):HTAB CO(X)-3
480 PRINT PBS(SF,X);:NEXT X:VTAB 14:HTAB 1
490 PRINT "CHOOSE FROM THE FOLLOWING COMMANDS:"
500 PRINT "<B>ACK, <F>ORWARD, <D>ELETE, <S>EARCH,"
510 PRINT "<P>RINT, ITEM <0-9> TO REDO, OR <E>XIT."
520 Z$ = "":VTAB 17:HTAB 1:PRINT BL$;
530 VTAB 17:HTAB 1:PRINT "COMMAND: ";:GET Z$
540 PRINT Z$:C = 0:FOR Z = 1 TO 6
550 IF MID$(Z$,1,1) = Z$ THEN C = Z:Z = 6
560 NEXT Z:ON C GOTO 600,620,640,730,870,900
570 IF Z$ < "0" OR Z$ > "9" THEN 520
580 X = VAL(Z$)+1:R = RO(X):C = CO(X):GOSUB 7000
590 PBS(SF,X) = TS:GOTO 520
600 IF SF = 1 THEN PRINT G$:GOTO 520
610 SF = SF-1:GOTO 460
620 IF SF = NE THEN PRINT G$:GOTO 520
630 SF = SF+1:GOTO 460
640 VTAB 20:HTAB 1:PRINT "ARE YOU SURE YOU WANT"
650 PRINT "TO DELETE THIS ENTRY? ";
660 GET Z$:IF Z$ <> "Y" AND Z$ <> "N" THEN 660
670 PRINT Z$:IF Z$ = "N" THEN 420
680 IF SF = NE THEN NE = NE-1:SF = NE:GOTO 710
690 FL = 1:FOR X = SF TO NE-1:FOR Y = 1 TO 11
700 PBS(X,Y) = PBS(X+1,Y):NEXT Y:NEXT X:NE = NE-1
710 IF NE = 0 THEN HOME:FS = "":GOTO 400
720 GOTO 420
730 VTAB 20:HTAB 1:PRINT "WHAT LAST NAME DO YOU WANT"
740 INPUT "TO FIND? ";SS$:IF SS$ = "" THEN 730
750 WS = "":FOR Y = 1 TO LEN(SS$)
760 P = ASC(MID$(SS$,Y,1))
770 WS = WS+CHR$(P-32*(P > 96)*(P < 123)):NEXT Y
780 W = 0:LW = LEN(WS):FOR X = 1 TO NE
790 IF WS = LEFT$(PBS(X,11),LW) THEN W = X:X = NE
800 NEXT X:IF W <> 0 THEN SF = W:GOTO 420
810 VTAB 22:HTAB 1
820 PRINT "SORRY, I CAN'T FIND THE NAME ";SS$;".
830 PRINT "DO YOU WANT TO TRY AGAIN? ";
840 GET Z$:IF Z$ <> "Y" AND Z$ <> "N" THEN 840
850 PRINT Z$:IF Z$ = "N" THEN 420
860 VTAB 22:HTAB 1:PRINT BL$:PRINT BL$:GOTO 730
870 VTAB 20:HTAB 1:GOSUB 8000
880 GET Z$:PRINT Z$:IF Z$ <> "Y" GOTO 420
890 X = SF:PRINT D$;"PR#1":GOSUB 9000
900 PRINT D$;"PR#0":GOTO 420
910 GOSUB 3000:IF NE <> 0 THEN 940
920 PRINT "THERE IS NO ADDRESS BOOK TO PRINT."
930 GOSUB 6000:GOTO 90
940 HOME:GOSUB 8000
950 GET Z$:PRINT Z$:IF Z$ <> "Y" THEN 90
960 PRINT D$;"PR#1":PRINT TAB(12);"MICRO PHONEBOOK"
970 PRINT:FOR X = 1 TO NE:GOSUB 9000:NEXT X
980 PRINT D$;"PR#0":GOSUB 6000:GOTO 90
990 M = 3:GOSUB 4000:IF A = 11 THEN 90
1000 FL = 1:FOR U = 1 TO NE-1:FOR V = U+1 TO NE
1010 IF PBS(U,A) <= PBS(V,A) THEN 1040
1020 FOR Y = 1 TO 11:VS = PBS(U,Y):PBS(U,Y) = PBS(V,Y)
1030 PBS(V,Y) = VS:NEXT Y:NEXT V:NEXT U
1040 A = FRE(0):GOTO 90

```

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PRODUCTIVITY PROGRAM

```

1050 INPUT "WHAT DRIVE ARE THE FILES IN ? ";DR$
1060 HOME:IF DR$ = "" THEN PRINT D$;"CATALOG":PRINT:GO
SUB 6000:GOTO 110
1070 DR$ = "CATALOG,"+DR$:PRINT D$:DR$
1080 PRINT:GOSUB 6000:GOTO 110
1090 INPUT "ENTER FILENAME: ";F$:IF F$ = "" THEN 90
1100 PRINT D$;"OPEN";F$:PRINT D$;"READ";F$
1110 INPUT NE:FOR X = 1 TO NE:FOR Y = 1 TO 11
1120 INPUT PB$(X,Y):NEXT Y:NEXT X
1130 PRINT D$;"CLOSE";F$:GOTO 90
1140 INPUT "ENTER FILENAME: ";F$:IF F$ = "" THEN 90
1150 FL = 0:PRINT D$;"OPEN";F$:PRINT D$;"WRITE";F$
1160 PRINT NE:FOR X = 1 TO NE:FOR Y = 1 TO 11
1170 PRINT PB$(X,Y):NEXT Y:NEXT X
1180 PRINT D$;"CLOSE";F$:GOTO 90
1190 INPUT "WHAT FILE DO YOU WANT TO DELETE? ";F$
1200 IF F$ = "" THEN 90
1210 PRINT "ARE YOU SURE YOU WANT TO DELETE ";F$;"?";
1220 GET Z$:IF Z$ <> "Y" AND Z$ <> "N" THEN 1220
1230 PRINT Z$:IF Z$ = "N" THEN 90
1240 PRINT D$;"DELETE";F$
1250 PRINT F$;" HAS BEEN DELETED."
1260 GOSUB 6000:GOTO 90
1270 IF FL = 0 OR NE = 0 THEN 1300
1280 GOSUB 5000:INPUT " ";Z
1290 ON Z GOTO 110,1300:GOTO 1280
1300 HOME:END
1999 REM --ERROR CHECKING ROUTINES--
2000 PRINT "I/O ERROR. CHECK DISK AND DISK DRIVE."
2010 POKE 216,0:GOSUB 6000:GOTO 110
2999 REM --CLEAR SCREEN SUBROUTINE--
3000 HOME:IF F$ = "" THEN NF$ = "UNNAMED"
3010 VTAB 24:HTAB 1
3020 PRINT "ADDRESS BOOK: ";NF$:
3030 IF FL = 1 THEN PRINT " (NOT SAVED)";
3040 VTAB 1:HTAB 1:RETURN
3999 REM --MENU SUBROUTINE--
4000 GOSUB 3000:PRINT:PRINT S$
4010 TA = (40-LEN(MM$(M,N(M))))/2
4020 PRINT TAB(TA);MM$(M,N(M)):PRINT
4030 FOR X = 1 TO N(M)-1:IF X = 11 THEN PRINT
4040 PRINT TAB(3-(X > 9));X;" ";MM$(M,X)
4050 NEXT X:PRINT:PRINT S$:INPUT "CHOICE: ";A
4060 IF A < 1 OR A > N(M)-1 THEN 4000
4070 RETURN
4999 REM --NOT SAVED SUBROUTINE--
5000 POKE 216,0:VTAB 16:HTAB 1
5010 PRINT "YOU DID NOT CLOSE THE CURRENT ADDRESS"
5020 PRINT "BOOK. ENTER <1> FOR ANOTHER CHANCE TO"
5030 PRINT "SAVE, OR ENTER <2> TO ERASE THE"
5040 PRINT "CURRENT ADDRESS BOOK: ";:RETURN
5999 REM --ANY KEY SUBROUTINE--
6000 PRINT TAB(7);"PRESS ANY KEY TO CONTINUE."
6010 GET Z$:RETURN
6999 REM --EDITOR SUBROUTINE--
7000 TS = "":TL = 0
7010 VTAB R:HTAB C:PRINT LEFT$(UL$,L(X))
7020 VTAB R:HTAB C:PRINT TS;
7030 IF TL <> L(X) THEN PRINT CHR$(95);
7040 VTAB R:HTAB C+TL
7050 GET K$:IF K$ <> CHR$(13) THEN 7080
7060 VTAB R:HTAB C+TL
7070 PRINT LEFT$(BL$,L(X)-TL+1):RETURN
7080 IF K$ <> CHR$(2) AND K$ <> CHR$(127) THEN 7120
7090 IF TL = 0 THEN PRINT G$;:GOTO 7050
7100 TL = TL-1:IF TL = 0 THEN TS = "":GOTO 7020
7110 TS = LEFT$(TS,TL):GOTO 7020
7120 IF K$ < CHR$(32) OR LEN(TS) = L(X) THEN PRINT G$;
:GOTO 7050
7130 TS = TS+K$:TL = TL+1:GOTO 7020
7999 REM --PRINT SUBROUTINES--
8000 PRINT "PRESS <Y> WHEN THE PRINTER IS READY OR"
8010 PRINT "ANY OTHER KEY TO CANCEL PRINTING.";
8020 RETURN

```

```

9000 PRINT PB$(X,2);" ";PB$(X,1)
9010 FOR Y = 3 TO 10:IF PB$(X,Y) = "" THEN 9060
9020 PRINT PB$(X,Y);
9030 IF Y = 6 THEN PRINT " ";:GOTO 9070
9040 IF Y = 7 THEN PRINT " ";:GOTO 9070
9050 PRINT:GOTO 9070
9060 IF Y = 8 OR Y = 9 THEN PRINT
9070 NEXT Y:PRINT:RETURN
9999 REM --LOCATION DATA--
10000 DATA 5,4,15,5,24,15,6,4,26,7,4,26,8,4,26
10010 DATA 9,4,15,9,24,2,9,32,5,10,4,26,11,4,26
10999 REM --MENU DATA--
11000 DATA 8,START A NEW ADDRESS BOOK
11010 DATA ADD TO THIS ADDRESS BOOK
11020 DATA BROWSE THROUGH THIS ADDRESS BOOK
11030 DATA PRINT THIS ADDRESS BOOK
11040 DATA REARRANGE THIS ADDRESS BOOK
11050 DATA OPEN OR CLOSE AN ADDRESS BOOK,QUIT
11060 DATA MICRO PHONEBOOK
11070 DATA 6,SEE THE NAMES OF YOUR FILES
11080 DATA OPEN AN ADDRESS BOOK
11090 DATA CLOSE THE CURRENT ADDRESS BOOK,ERASE A FILE
11100 DATA RETURN TO THE MAIN MENU,DO YOU WANT TO...
11110 DATA 12,LAST NAME,FIRST NAME,COMPANY,ADDRESS #1
11120 DATA ADDRESS #2,CITY,STATE,ZIP CODE,HOME NUMBER
11130 DATA WORK NUMBER,RETURN TO MAIN MENU
11140 DATA ARRANGE ACCORDING TO...

```

Commodore 64 & 128 (C 64 mode) w/disk drive (printer optional)/Micro Phonebook

```

10 DIM CO(10),L(10),MM$(3,12),N(3),PB$(120,11),RO(10)
20 FOR X=1 TO 10:READ RO(X),CO(X),L(X):NEXT X
30 FOR X=1 TO 3:READ N(X):FOR Y=1 TO N(X)
40 READ MM$(X,Y):NEXT Y:NEXT X
50 BL$="":FOR X=1 TO 39:BL$=BL$+CHR$(32):NEXT X
60 FL=0:F$="":NE=0:POKE 53280,14
70 S$="":FOR X=1 TO 40:S$=S$+CHR$(96):NEXT X
80 UL$="":FOR X=1 TO 40:UL$=UL$+CHR$(164):NEXT X
90 M=1:FA=0:GOSUB 5000
100 ON A GOTO 130,170,380,930,1010,110,1430
110 M=2:GOSUB 5000
120 ON A GOTO 1070,1190,1260,1350,90
130 IF FL=0 THEN 170
140 GOSUB 6000:INPUT Z
150 ON Z GOTO 110,160:GOTO 140
160 NE=0:DF$=""
170 GOSUB 4000:FL=1:IF NE=120 THEN 350
180 PRINT "PRESS <ENTER> AT THE END OF EACH"
190 PRINT "LINE. TO LEAVE A LINE BLANK, JUST"
200 PRINT "PRESS <ENTER>. LEAVE THE LAST NAME"
210 PRINT "LINE BLANK WHEN YOU HAVE NO MORE"
220 PRINT "NAMES TO ADD.":PRINT:PRINT
230 FOR X=1 TO 10:POKE 214,7+X:PRINT
240 PRINT MM$(3,X);:NEXT X
250 NE=NE+1:PB$(NE,11)=""
260 FOR X=1 TO 10:POKE 214,7+X:PRINT
270 PRINT TAB(12);LEFT$(BL$,L(X)):NEXT X
280 FOR X=1 TO 10:R=7+X:C=12:GOSUB 9000:PB$(NE,X)=TS
290 IF PB$(NE,1)="" THEN NE=NE-1:FA=1:X=10
300 NEXT X:IF FA=1 THEN 90
310 FOR Y=1 TO LEN(PB$(NE,1))
320 P=ASC(MID$(PB$(NE,1),Y,1))
330 PB$(NE,11)=PB$(NE,11)+CHR$(P-32*(P>96)*(P<123))
340 NEXT Y:IF NE<120 THEN 250
350 PRINT "YOU HAVE REACHED THE LIMIT"
360 PRINT "SAVE IT TO DISK AND START ANOTHER."
370 GOSUB 7000:GOTO 90
380 GOSUB 4000:SF=1:IF NE<>0 THEN 410
390 PRINT "THERE IS NO ADDRESS BOOK TO BROWSE"
400 PRINT "THROUGH.":GOSUB 7000:GOTO 90
410 GOSUB 4000:FL=1:POKE 214,2:PRINT
420 PRINT TAB(12);"MICRO PHONEBOOK"

```



```

430 FOR X=1 TO 10:POKE 214,RO(X):PRINT
440 PRINT TAB(CO(X)-3);RIGHT$(STR$(X-1),1);": ";
450 NEXT X
460 FOR X=1 TO 10:POKE 214,RO(X):PRINT
470 PRINT TAB(CO(X));LEFT$(BL$,L(X));
480 POKE 214,RO(X):PRINT
490 PRINT TAB(CO(X));PB$(SF,X);:NEXT X
500 POKE 214,13:PRINT
510 PRINT "CHOOSE FROM THE FOLLOWING COMMANDS:"
520 PRINT "<B>ACK, <F>ORWARD, <D>ELETE, <S>EARCH,"
530 PRINT "<P>RINT, ITEM <0-9> TO REDO, OR <E>XIT."
540 Z$="":POKE 214,16:PRINT:PRINT BL$;
550 POKE 214,16:PRINT:PRINT "COMMAND: ";:GOSUB 8000
560 PRINT Z$:C=0:FOR Z=1 TO 6
570 IF MID$( "BFDSPE",Z,1)=Z$ THEN C=Z:Z=6
580 NEXT Z:ON C GOTO 620,640,660,750,890,90
590 IF Z$="" OR Z$="9" THEN 540
600 X=VAL(Z$)+1:R=RO(X):C=CO(X):GOSUB 9000
610 PB$(SF,X)=TS:GOTO 540
620 IF SF=1 THEN 540
630 SF=SF-1:GOTO 460
640 IF SF=NE THEN 540
650 SF=SF+1:GOTO 460
660 POKE 214,18:PRINT:PRINT "ARE YOU SURE YOU WANT"
670 PRINT "TO DELETE THIS ENTRY? ";
680 GOSUB 8000:IF Z$<"Y" AND Z$<"N" THEN 680
690 PRINT Z$:IF Z$="N" THEN 410
700 IF SF=NE THEN NE=NE-1:SF=NE:GOTO 730
710 FL=1:FOR X=SF TO NE-1:FOR Y=1 TO 11
720 PB$(X,Y)=PB$(X+1,Y):NEXT Y:NEXT X:NE=NE-1
730 IF NE=0 THEN PRINT CHR$(147);:F$="":GOTO 390
740 GOTO 410
750 W=0:POKE 214,18:PRINT
760 PRINT "WHAT LAST NAME DO YOU WANT"
770 INPUT "TO FIND";SS$:IF SS$="" THEN 750
780 W$="":FOR Y=1 TO LEN(SS$):P=ASC(MID$(SS$,Y,1))
790 W$=W$+CHR$(P-32*(P>96)*(P<123)):NEXT Y
800 FOR X=1 TO NE
810 IF W$=LEFT$(PB$(X,11),LEN(W$)) THEN W=X:X=NE
820 NEXT X:IF W<0 THEN SF=W:GOTO 410
830 POKE 214,20:PRINT
840 PRINT "SORRY, I CAN'T FIND THE NAME ";SS$;". "
850 PRINT "DO YOU WANT TO TRY AGAIN? ";
860 GOSUB 8000:IF Z$<"Y" AND Z$<"N" THEN 860
870 PRINT Z$:IF Z$="N" THEN 410
880 POKE 214,20:PRINT:PRINT BL$:GOTO 750
890 POKE 214,18:PRINT:GOSUB 10000
900 GOSUB 8000:PRINT Z$:IF Z$<"Y" GOTO 410
910 X=SF:OPEN 4,4:GOSUB 11000
920 CLOSE 4:GOTO 410
930 GOSUB 4000:IF NE<0 THEN 960
940 PRINT "THERE IS NO ADDRESS BOOK TO PRINT."
950 GOSUB 7000:GOTO 90
960 PRINT CHR$(147);:GOSUB 10000
970 GOSUB 8000:PRINT Z$:IF Z$<"Y" THEN 90
980 OPEN 4,4:PRINT#4,TAB(12);"MICRO PHONEBOOK":PRINT#4
990 FOR X=1 TO NE:GOSUB 11000:NEXT X
1000 CLOSE 4:GOTO 90
1010 M=3:GOSUB 5000:IF A=11 THEN 90
1020 FL=1:FOR U=1 TO NE-1:FOR V=U+1 TO NE
1030 IF PB$(U,A)<PB$(V,A) THEN 1060
1040 FOR Y=1 TO 11:V$=PB$(U,Y):PB$(U,Y)=PB$(V,Y)
1050 PB$(V,Y)=V$:NEXT Y
1060 NEXT V:NEXT U:A=FRE(0):GOTO 90
1070 INPUT "WHAT DRIVE ARE THE FILES IN, 8 OR 9";DR
1080 IF DR=0 THEN DR=8:GOTO 1100
1090 IF DR<8 OR DR>9 THEN 110
1100 PRINT CHR$(147);:CLOSE 2:OPEN 2,DR,0,"$":CLOSE 2
1110 CLOSE 15:OPEN 15,DR,15:INPUT#15,ER,ERS:CLOSE 15
1120 IF ER<0 THEN GOSUB 3000:GOTO 110
1130 OPEN 2,DR,0,"$":PRINT "DISK NAME: ";
1140 GET#2,TS:IF TS=CHR$(199) THEN 1180
1150 IF TS=CHR$(34) THEN F=NOT F:ON ABS(F) GOTO 1140:P
RINT:GOTO 1140

```

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PRODUCTIVITY PROGRAM

```

1160 IF F THEN PRINT TS;
1170 GOTO 1140
1180 CLOSE 2:PRINT:GOSUB 7000:GOTO 110
1190 GOSUB 8020:INPUT "ENTER FILENAME: ";DFS
1200 IF DFS="" THEN 110
1210 FS="0:"DFS+"S":GOSUB 2000
1220 IF ER<>0 THEN GOSUB 3000:GOTO 120
1230 OPEN 2,8,2,FS+",R"
1240 INPUT#2,NE:FOR X=1 TO NE:FOR Y=1 TO 11
1250 INPUT#2,PB$(X,Y):NEXT Y:NEXT X:CLOSE 2:GOTO 90
1260 GOSUB 8020:INPUT "ENTER FILENAME: ";DFS
1270 IF DFS="" THEN 110
1280 FS="0:"DFS+"S":FL=0:GOSUB 2000
1290 IF ER<>0 AND ER<>62 THEN GOSUB 3000:GOTO 120
1300 IF ER=0 THEN FS="0"+FS
1310 OPEN 2,8,2,FS+",W"
1320 PRINT#2,NE:FOR X=1 TO NE:FOR Y=1 TO 11
1330 IF PB$(X,Y)="" THEN PB$(X,Y)=CHR$(32)
1340 PRINT#2,PB$(X,Y):NEXT Y:NEXT X:CLOSE 2:GOTO 90
1350 INPUT "WHAT FILE DO YOU WANT TO DELETE";FS
1360 IF FS="" THEN 110
1370 PRINT "ARE YOU SURE YOU WANT TO DELETE ";FS;"?";
1380 GOSUB 8000:IF Z$<>"Y" AND Z$<>"N" THEN 1380
1390 PRINT Z$:IF Z$="N" THEN 90
1400 GOSUB 2000:IF ER<>0 THEN GOSUB 3000:GOTO 110
1410 OPEN 15,8,15,"S0:"FS:CLOSE 15
1420 PRINT FS;" HAS BEEN DELETED.":GOSUB 7000:GOTO 90
1430 IF FL=0 OR NE=0 THEN 1460
1440 GOSUB 6000:INPUT Z
1450 ON Z GOTO 110,1460:GOTO 1440
1460 PRINT CHR$(147);:END
1999 REM --ERROR CHECKING ROUTINES--
2000 CLOSE 2:OPEN 2,8,2,FS+",R":CLOSE 2
2010 CLOSE 15:OPEN 15,8,15:INPUT#15,ER,ER$:CLOSE 15
2020 RETURN
3000 PRINT "I/O ERROR. CHECK DISK AND DISK DRIVE."
3010 GOSUB 7000:RETURN
3999 REM --CLEAR SCREEN SUBROUTINE--
4000 PRINT CHR$(147);:NFS=DFS
4010 IF DFS="" THEN NFS="UNNAMED"
4020 POKE 214,23:PRINT:PRINT "ADDRESS BOOK: ";NFS;
4030 IF FL=1 THEN PRINT " (NOT SAVED)";
4040 POKE 214,0:PRINT:RETURN
4999 REM --MENU SUBROUTINE--
5000 GOSUB 4000:PRINT:PRINT S$
5010 TA=(40-LEN(MM$(M,N(M))))/2
5020 PRINT TAB(TA);MM$(M,N(M)):PRINT
5030 FOR X=1 TO N(M)-1:IF X=11 THEN PRINT
5040 PRINT TAB(2+(X>9));STR$(X);": ";MM$(M,X)
5050 NEXT X:PRINT:PRINT S$:GOSUB 8020
5060 INPUT "CHOICE: ";A:IF A<1 OR A>N(M)-1 THEN 5000
5070 RETURN
5999 REM --NOT SAVED SUBROUTINE--
6000 POKE 214,15:PRINT
6010 PRINT "YOU DID NOT CLOSE THE CURRENT ADDRESS"
6020 PRINT "BOOK. ENTER <1> FOR ANOTHER CHANCE TO"
6030 PRINT "SAVE, OR ENTER <2> TO ERASE THE"
6040 PRINT "CURRENT ADDRESS BOOK: ";:RETURN
6999 REM --ANY KEY SUBROUTINE--
7000 PRINT:PRINT TAB(7);"PRESS ANY KEY TO CONTINUE."
7999 REM --INPUT SUBROUTINE--
8000 GET Z$:IF Z$="" THEN 8000
8010 Z=ASC(Z$):Z$=CHR$(Z-32*(Z>96))*(Z<123)):RETURN
8020 POKE 198,4:POKE 631,20:POKE 632,20
8030 POKE 633,32:POKE 634,32:RETURN
8999 REM --EDITOR SUBROUTINE--
9000 TS="":TL=0:POKE 214,R:PRINT
9010 PRINT TAB(C);LEFT$(UL$,L(X))
9020 POKE 214,R:PRINT:PRINT TAB(C);TS;
9030 IF TL>L(X) THEN PRINT CHR$(164);
9040 POKE 214,R:PRINT:PRINT TAB(C+TL);
9050 GET K$:IF K$="" THEN 9050
9060 IF K$<>CHR$(13) THEN 9090

```

```

9070 POKE 214,R:PRINT
9080 PRINT TAB(C+TL);LEFT$(BL$,L(X)-TL+1):RETURN
9090 IF K$<>CHR$(20) THEN 9120
9100 IF TL=0 THEN 9050
9110 TL=TL-1:TS=LEFT$(TS,TL):GOTO 9020
9120 IF K$<CHR$(32) OR K$>CHR$(90) THEN 9050
9130 IF LEN(TS)=L(X) THEN POKE 53280,2:GOTO 9150
9140 TS=TS+K$:TL=TL+1:GOTO 9020
9150 FOR D=1 TO 50:NEXT D:POKE 53280,14:GOTO 9050
9999 REM --PRINT SUBROUTINES--
10000 PRINT "PRESS <Y> WHEN THE PRINTER IS READY OR"
10010 PRINT "ANY OTHER KEY TO CANCEL PRINTING.";
10020 RETURN
11000 PRINT#4,PB$(X,2);": ";PB$(X,1)
11010 FOR Y=3 TO 10
11020 IF PB$(X,Y)="" OR PB$(X,Y)=CHR$(32) THEN 11070
11030 PRINT#4,PB$(X,Y);
11040 IF Y=6 THEN PRINT#4," ";:GOTO 11080
11050 IF Y=7 THEN PRINT#4," ";:GOTO 11080
11060 PRINT#4:GOTO 11080
11070 IF Y=8 OR Y=9 THEN PRINT#4
11080 NEXT Y:PRINT#4:RETURN
11999 REM --LOCATION DATA--
12000 DATA 5,4,15,5,24,15,6,4,26,7,4,26,8,4,26
12010 DATA 9,4,15,9,24,2,9,32,5,10,4,26,11,4,26
12999 REM --MENU DATA--
13000 DATA 8,START A NEW ADDRESS BOOK
13010 DATA ADD TO THIS ADDRESS BOOK
13020 DATA BROWSE THROUGH THIS ADDRESS BOOK
13030 DATA PRINT THIS ADDRESS BOOK
13040 DATA REARRANGE THIS ADDRESS BOOK
13050 DATA OPEN OR CLOSE AN ADDRESS BOOK,QUIT
13060 DATA MICRO PHONEBOOK
13070 DATA 6,SEE THE NAMES OF YOUR FILES
13080 DATA OPEN AN ADDRESS BOOK
13090 DATA CLOSE THE CURRENT ADDRESS BOOK,ERASE A FILE
13100 DATA RETURN TO THE MAIN MENU,DO YOU WANT TO...
13110 DATA 12,LAST NAME,FIRST NAME,COMPANY,ADDRESS #1
13120 DATA ADDRESS #2,CITY,STATE,ZIP CODE,HOME NUMBER
13130 DATA WORK NUMBER,RETURN TO MAIN MENU
13140 DATA ARRANGE ACCORDING TO...

```

IBM PC & compatibles w/128K RAM & disk drive (printer optional)/Micro Phonebook

This program has been tested and found to work on the following computers and hardware configurations using the BASICs shown: IBM PC w/ColorGraphics Monitor Adapter or Monochrome Printer card, w/Disk BASIC D2.00 or Advanced BASIC A2.00, IBM PCjr w/Cartridge BASIC J1.00, Tandy 1000 w/GW BASIC 2.02 version 01.01.00. It should also work on many PC compatibles.

```

10 DEF SEG=8H40:V=PEEK(8H10) AND 48:DEF SEG
20 IF V=32 THEN WIDTH 40:VL=7 ELSE VL=13
30 KEY OFF:LOCATE ,1,0,VL:T=205
40 DIM CO(10),L(10),MM$(3,12),N(3),PB$(120,11),RO(10)
50 FOR X=1 TO 10:READ RO(X),CO(X),L(X):NEXT X
60 FOR X=1 TO 3:READ N(X):FOR Y=1 TO N(X)
70 READ MM$(X,Y):NEXT Y:NEXT X
80 BL$=STRING$(39,32):FL=0:FS="":NE=0:S$=STRING$(40,T)
90 M=1:FA=0:ON ERROR GOTO 0:GOSUB 4000
100 ON A GOTO 130,170,360,840,920,110,1160
110 M=2:ON ERROR GOTO 2000:GOSUB 4000
120 ON A GOTO 970,1010,1050,1090,90
130 IF FL=0 THEN 170
140 GOSUB 5000:INPUT "",Z
150 ON Z GOTO 110,160:GOTO 140
160 NE=0:FS=""
170 GOSUB 3000:FL=1:IF NE=120 THEN 330
180 PRINT "Press <Enter> at the end of each"
190 PRINT "line. To leave a line blank, just"
200 PRINT "press <Enter>. Leave the Last Name"
210 PRINT "line blank when you have no more"
220 PRINT "names to add.":PRINT:PRINT
230 FOR X=1 TO 10:LOCATE 7+X,1:PRINT MM$(3,X):NEXT X
240 NE=NE+1:PB$(NE,11)="" :FOR X=1 TO 10:LOCATE 7+X,14
250 PRINT STRING$(L(X),32):NEXT X

```



```

260 FOR X=1 TO 10:R=7+X:C=14:GOSUB 8000:PB$(NE,X)=TS
270 IF PB$(NE,1)="" THEN NE=NE-1:X=10:FA=1
280 NEXT X:PRINT:IF FA=1 THEN 90
290 FOR Y=1 TO LEN(PB$(NE,1))
300 P=ASC(MID$(PB$(NE,1),Y,1))
310 PB$(NE,1)=PB$(NE,1)+CHR$(P-32*(P>96)*(P<123))
320 NEXT Y:IF NE<120 THEN 240
330 PRINT "You have reached the limit"
340 PRINT "Save it to disk and start another."
350 GOSUB 6000:GOTO 90
360 GOSUB 3000:SF=1:IF NE<>0 THEN 390
370 PRINT "There is no address book to browse"
380 PRINT "through.":GOSUB 6000:GOTO 90
390 GOSUB 3000:FL=1:LOCATE 2,12
400 PRINT "Micro Phonebook"
410 COLOR 15:FOR X=1 TO 10:LOCATE RO(X),CO(X)-3
420 PRINT RIGHT$(STR$(X-1),1);": ";NEXT X
430 COLOR 7:FOR X=1 TO 10:LOCATE RO(X),CO(X)
440 PRINT LEFT$(BL$(X),1);LOCATE RO(X),CO(X)
450 PRINT PB$(SF,X);NEXT X:LOCATE 14,1
460 PRINT "Choose from the following commands:"
470 PRINT "<B>ack, <F>orward, <D>elete, <S>earch,"
480 PRINT "<P>rint, <O>-9 to change, or <E>xit."
490 Z$="":LOCATE 17,1:PRINT BL$;
500 LOCATE 17,1:PRINT "Command: ";:GOSUB 7000:PRINT Z$
510 ON INSTR("BFDSP",Z$) GOTO 550,570,590,680,810,90
520 IF Z$="O" OR Z$="9" THEN 490
530 X=VAL(Z$)+1:R=RO(X):C=CO(X):GOSUB 8000
540 PB$(SF,X)=TS:GOTO 490
550 IF SF=1 THEN SOUND 400,2:GOTO 490
560 SF=SF-1:GOTO 430
570 IF SF=NE THEN SOUND 400,2:GOTO 490
580 SF=SF+1:GOTO 430
590 LOCATE 20,1:PRINT "Are you sure you want"
600 PRINT "to delete this entry? ";
610 GOSUB 7000:IF Z$<>"Y" AND Z$<>"N" THEN 610
620 PRINT Z$:IF Z$="N" THEN 390
630 IF SF=NE THEN NE=NE-1:SF=NE:GOTO 660
640 FL=1:FOR X=SF TO NE-1:FOR Y=1 TO 11
650 PB$(X,Y)=PB$(X+1,Y):NEXT Y:NEXT X:NE=NE-1
660 IF NE=0 THEN CLS:F$="":GOTO 370
670 GOTO 390
680 LOCATE 20,1:W=0:PRINT "What Last Name do you want"
690 INPUT "to find? ";SS$
700 W$="":FOR Y=1 TO LEN(SS$):P=ASC(MID$(SS$,Y,1))
710 W$=W$+CHR$(P-32*(P>96)*(P<123)):NEXT Y
720 FOR X=1 TO NE
730 IF W$=LEFT$(PB$(X,11),LEN(W$)) THEN W=X:X=NE
740 NEXT X:IF W<>0 THEN SF=W:GOTO 390
750 LOCATE 22,1
760 PRINT "Sorry, I can't find the name ";SS$;".
770 PRINT "Do you want to try again? ";
780 GOSUB 7000:IF Z$<>"Y" AND Z$<>"N" THEN 780
790 PRINT Z$:IF Z$="N" THEN 390
800 LOCATE 22,1:PRINT BL$:PRINT BL$:GOTO 680
810 LOCATE 20,1:GOSUB 9000
820 GOSUB 7000:PRINT Z$:IF Z$<>"Y" GOTO 390
830 X=SF:GOSUB 9020:GOTO 390
840 GOSUB 3000:IF NE<>0 THEN 870
850 PRINT "There is no address book to print."
860 GOSUB 6000:GOTO 90
870 CLS:GOSUB 9000
880 GOSUB 7000:PRINT Z$:IF Z$<>"Y" THEN 90
890 LPRINT TAB(12);"Micro Phonebook":LPRINT
900 FOR X=1 TO NE:GOSUB 9020:NEXT X
910 GOSUB 6000:GOTO 90
920 M=3:GOSUB 4000:IF A=11 THEN 90
930 FL=1:FOR U=1 TO NE-1:FOR V=U+1 TO NE
940 IF PB$(U,A)<=PB$(V,A) THEN 960
950 FOR Y=1 TO 11:SWAP PB$(U,Y),PB$(V,Y):NEXT Y
960 NEXT V:NEXT U:A=FRE(" "):GOTO 90
970 INPUT "What drive are the files in (A or B) ";DR$
980 IF DR$="" THEN GOSUB 3000:FILES:PRINT:GOSUB 6000:G
990 TO 110

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```

990 IF RIGHT$(DR$,1)<>":" THEN DR$=LEFT$(DR$,1)+":
1000 GOSUB 3000:FILES:PRINT:GOSUB 6000:GOTO 110
1010 INPUT "Enter filename: ";F$:IF F$="" THEN 110
1020 OPEN F$ FOR INPUT AS #1
1030 INPUT#1,NE:FOR X=1 TO NE:FOR Y=1 TO 11
1040 INPUT#1,PB$(X,Y):NEXT Y:NEXT X:CLOSE 1:GOTO 90
1050 INPUT "Enter filename: ";F$:IF F$="" THEN 110
1060 FL=0:OPEN F$ FOR OUTPUT AS #1
1070 WRITE#1,NE:FOR X=1 TO NE:FOR Y=1 TO 11
1080 WRITE#1,PB$(X,Y):NEXT Y:NEXT X:CLOSE 1:GOTO 90
1090 INPUT "What file do you want to delete?";F$
1100 IF F$="" THEN 90
1110 PRINT "Are you sure you want to delete ";F$;"?";
1120 GOSUB 7000:IF Z$<>"Y" AND Z$<>"N" THEN 1120
1130 PRINT Z$:IF Z$="N" THEN 90
1140 KILL F$:PRINT F$;" has been deleted."
1150 GOSUB 6000:GOTO 90
1160 IF FL=0 OR NE=0 THEN 1190
1170 GOSUB 5000:INPUT " ",Z
1180 ON Z GOTO 110,1190:GOTO 1170
1190 LOCATE,,,VL+(VL=13),VL:CLS:KEY ON:END
1999 REM --ERROR CHECKING ROUTINES--
2000 PRINT "I/O error. Check disk and disk drive."
2010 CLOSE 1:GOSUB 6000: RESUME 110
2999 REM --CLEAR SCREEN SUBROUTINE--
3000 CLS:IF F$="" THEN NF$="Unnamed" ELSE NF$=F$
3010 COLOR 15:LOCATE 25,1
3020 PRINT "Address Book: ";NF$;
3030 IF FL=1 THEN PRINT " (not saved)";
3040 COLOR 7:LOCATE 1,1:RETURN
3999 REM --MENU SUBROUTINE--
4000 GOSUB 3000:PRINT:PRINT S$
4010 TA=(40-LEN(MM$(M,N(M))))/2
4020 PRINT TAB(TA);MM$(M,N(M)):PRINT
4030 FOR X=1 TO N(M)-1:IF X=11 THEN PRINT
4040 PRINT TAB(3+(X>9));STR$(X);": ";MM$(M,X)
4050 NEXT X:PRINT:PRINT S$:INPUT "Choice: ";A
4060 IF A<1 OR A>N(M)-1 THEN 4000 ELSE RETURN
4999 REM --NOT SAVED SUBROUTINE--
5000 LOCATE 16,1
5010 PRINT "You did not close the current address"
5020 PRINT "book. Enter <1> for another chance to"
5030 PRINT "save, or enter <2> to erase the"
5040 PRINT "current address book: ";:RETURN
5999 REM --ANY KEY SUBROUTINE--
6000 PRINT:PRINT TAB(7);"Press any key to continue."
6010 GOSUB 7000:RETURN
6999 REM --INPUT SUBROUTINE--
7000 Z$=INKEY$:IF Z$="" THEN 7000
7010 Z=ASC(Z$):Z$=CHR$(Z-32*(Z>96)*(Z<123)):RETURN
7999 REM --EDITOR SUBROUTINE--
8000 TS="":TL=0:LOCATE R,C,1:PRINT STRING$(L(X),95)
8010 LOCATE R,C:PRINT TS;
8020 LOCATE R,C+TL
8030 K$=INKEY$:IF K$="" THEN 8030
8040 IF K$<>CHR$(13) THEN 8060
8050 LOCATE R,C+TL,0:PRINT STRING$(L(X)-TL,32):RETURN
8060 IF K$<>CHR$(8) THEN 8090
8070 IF TL=0 THEN SOUND 400,20:GOTO 8030
8080 TL=TL-1:TS=LEFT$(TS,TL):GOTO 8010
8090 IF K$<>CHR$(32) OR LEN(K$)=2 OR LEN(TS)=L(X) THEN
SOUND 400,2:GOTO 8030
8100 TS=TS+K$:TL=TL+1:GOTO 8010
8999 REM --PRINT SUBROUTINES--
9000 PRINT "Press <Y> when the printer is ready or"
9010 PRINT "any other key to cancel printing.":RETURN
9020 LPRINT PB$(X,2);": ";PB$(X,1)
9030 FOR Y=3 TO 10:IF PB$(X,Y)="" THEN 9080
9040 LPRINT PB$(X,Y);
9050 IF Y=6 THEN LPRINT " ";:GOTO 9090
9060 IF Y=7 THEN LPRINT " ";:GOTO 9090
9070 LPRINT:GOTO 9090
9080 IF Y=8 OR Y=9 THEN LPRINT
9090 NEXT Y:LPRINT:RETURN

```



```

9999 REM --LOCATION DATA--
10000 DATA 5,4,15,5,24,15,6,4,26,7,4,26,8,4,26
10010 DATA 9,4,15,9,24,2,9,32,5,10,4,26,11,4,26
10999 REM --MENU DATA--
11000 DATA 8,Start a new address book
11010 DATA Add to this address book
11020 DATA Browse through this address book
11030 DATA Print this address book
11040 DATA Rearrange this address book
11050 DATA Open or close an address book,Quit
11060 DATA Micro Phonebook
11070 DATA 6,See the names of your files
11080 DATA Open an address book
11090 DATA Close the current address book,Erase a file
11100 DATA Return to the main menu,Do you want to...
11110 DATA 12,Last Name,First Name,Company,Address #1
11120 DATA Address #2,City,State,Zip Code,Home Number
11130 DATA Work Number,Return to main menu
11140 DATA Arrange according to...
    
```

MODIFICATIONS FOR OTHER COMPUTERS

Apple II series w/64K RAM, disk drive (printer optional), & ProDOS/Micro Phonebook

Use the Apple II version, except change lines 1060 and 1070 to read as follows:

```

1060 HOME:IF DR$ = "" THEN PRINT D$;"CAT":PRINT:GOSUB
6000:GOTO 110
1070 DR$ = "CAT,"+DR$:PRINT D$;DR$
    
```

Macintosh w/Microsoft BASIC 2.0 or 2.1 (printer optional)/Micro Phonebook

Use the IBM PC version, with the following alterations: Delete lines 980-1000. Also, change lines 10-30, 410, 430, 970, 1190, 3010, 3040, 8000, 8010, 8050, 10000, and 10010 to read as follows:

```

10 CALL TEXTFONT(4):CALL TEXTSIZE(9)
20 CALL TEXTMODE(0):T=61
30 WINDOW 1,"", (0,38)-(527,338)
410 FOR X=1 TO 10:LOCATE RO(X),CO(X)-3
430 FOR X=1 TO 10:LOCATE RO(X),CO(X)
970 CLS:FILES:PRINT:GOSUB 6000:GOTO 110
1190 CLS:END
3010 LOCATE 25,1
3040 LOCATE 1,1:RETURN
8000 TS="":TL=0
8010 LOCATE R,C:PRINT TS;STRING$(L(X)-LEN(TS),95);
8050 PRINT STRING$(L(X)-TL,32):RETURN
10000 DATA 5,4,15,5,30,15,6,4,26,7,4,26,8,4,26
10010 DATA 9,4,15,9,30,2,9,42,5,10,4,26,11,4,26
    
```

COMPUTERS WE COVER

We regularly present two or more programs in each issue for the Apple II series; Atari 400/800, 600/800XL, & 130XE; Commodore 64 & 128 (in C 64 mode); IBM PC and compatibles; and Color Computer. However, occasionally we have to omit versions when a program requires capabilities that some of these computers lack. For example, many Microtones programs can only run on computers that have three voices, which eliminates the Apple II series; IBM PC and compatibles (except the PCjr with Cartridge BASIC and the Tandy 1000); and Tandy Models III, 4, and Color Computer.

In addition, we publish at least one program each issue for the Adam, Macintosh, Tandy Models III/4, TI-99/4A, and VIC-20. In the future, we also hope to cover the Atari 520ST and the Amiga. This month, these programs can be found here in The Programmer and in Microtones (in the K-POWER section of FAMILY COMPUTING).

TIPS TO THE TYPIST

SOME GENERAL RULES

1. Read instructions and program headings carefully.
2. Don't let fatigue and boredom contribute to inaccuracy. If you're new to programming, type in a longer program in easy stages, saving each installment as you go.
3. Assume that every character in a program listing must be copied accurately if a program is to work.
4. Watch out for potential trouble spots. About 90 percent of all typing errors occur in DATA statements.
5. Be aware that our program listings are printed 54 characters wide. Thus, a single BASIC program "line" (sometimes called a "logical line") may appear as several lines in our listing. If you are typing along and reach the right margin of the printed listing, don't press RETURN or ENTER before checking to see if the program "line" you're typing really ends there.
6. To correct an error in a BASIC program line, type the line in again from the beginning, and press RETURN or ENTER to replace the old line.

WHICH PROGRAM WILL RUN ON MY COMPUTER?

- Apple programs run under Applesoft (not Integer) BASIC on the Apple II (with language card), II plus, IIe, and IIc.
- IBM compatibility of BASIC programs is determined by both the hardware and the version of BASIC used. Our programs for IBM PC and compatibles are composed on IBM PCs and PCjr's, and are tested under most versions of BASIC available for these machines. Each "IBM PC and compatibles" program listing is supplemented by a run-down of the machines and versions of BASIC under which the program is guaranteed to work.
- TI programs not marked "w/TI Extended BASIC" should be run under standard (console) TI BASIC.

DEBUGGING HINTS

1. Write down any error messages you receive.
2. Look up error messages in your manual, and check the indicated lines for simple mistakes. Also check related lines, such as the DATA statements corresponding to a READ routine. Correct all the problems you can find, and save a corrected copy of the program before typing RUN again.
3. LIST the program in screen-size chunks (check your manual for instructions on how to LIST parts of a program) or get a printout. Compare what you've typed in—letter by letter—to the published program. Make sure that you haven't dropped or mixed up some punctuation, switched uppercase text for lowercase, or vice versa, or miscounted the characters (and/or spaces) between a pair of quotes.
4. Mistakes in DATA statements are the single most common cause of program failures. If you can't find your error in the lines the computer specifies, check your DATA statements line by line, letter by letter, comma by comma.
5. If all else fails, turn off your computer and relax. Then try again the next day—exhausted proofreaders are careless proofreaders.

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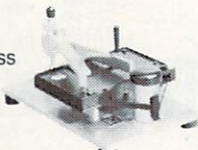
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